SOUTHERN

Flight

Including MODERN AIRPORTS

November, 1945
25 cents

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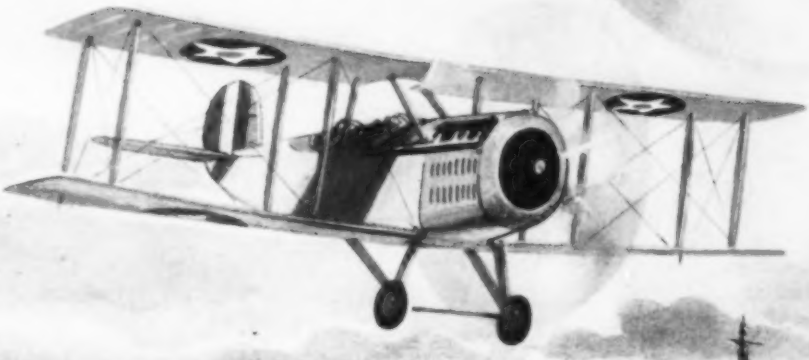

1922—U. S. S. LANGLEY
FIRST NAVY CARRIER
EQUIPPED WITH VOUGHT VE-9's

1945—U. S. S. MIDWAY
LATEST NAVY CARRIER
EQUIPPED WITH VOUGHT F4U-4's

Continuous PERFORMANCE

Since 1922, when the Navy's first aircraft carrier, the U. S. S. Langley, was equipped exclusively with Vought VE-9's, Chance Vought Aircraft has continuously carried on its tradition of providing first-line airplanes for the U. S. Navy.

Today that tradition is stronger than ever. The Navy's mightiest carriers are equipped with the world's fastest and finest shipboard fighters—Vought F4U-4 Corsairs.

CHANCE VOUGHT AIRCRAFT, STRATFORD, CONNECTICUT
ONE OF THE FOUR DIVISIONS OF UNITED AIRCRAFT CORPORATION

THE RAINBOW, HAPPY SYMBOL OF PEACE-TIME AIR SAFETY, WILL EMPHASIZE, AS NO PLANE YET CONCEIVED, THAT THE VAST IMPROVEMENT IN MODERN AIRCRAFT DOES NOT JUST HAPPEN...AND THAT GREAT AIRPLANES SUCH AS THIS NEW LUXURY LINER, ARE BORN OF FAR MORE THAN SHEER CREATIVE GENIUS. FOR ONLY WAR'S TRIED AND TESTED EXPERIENCE WITH HIGH-SPEED FIGHTERS, SUCH AS THE THUNDERBOLTS, WHICH ESTABLISHED RECORDS FROM SEA LEVEL TO STRATOSPHERE, COULD ASSURE THE RUGGED SAFETY, THE RELAXING COMFORT AND THE UNAPPROACHED SPEED OF THIS REVOLUTIONARY TRANSPORT.

REPUBLIC

Rainbow

A PRODUCT OF REPUBLIC AVIATION

Makers of the Mighty Thunderbolt

Symbols of Victory

HISTORY will record airpower as the dominant force that brought Peace to the world.

Down through the ages...echoing the corridors of Time, Americans of all generations will pay tribute to the men of this generation who wore wings, and to those who serviced and maintained the planes they flew.

The workers of the aircraft industry...the people who designed and built those planes...join the nation in acclaiming your glorious contributions to victory.

Printed in U. S. A.

CURTISS
AIRPLANES
DIVISION OF
CURTISS WRIGHT
FIRST IN FLIGHT

The Grumman Widgeon Amphibian brings formerly inaccessible lakes and rivers within easy reach of the executive and sportsman.

Available for immediate delivery.

Grumman

AIRCRAFT ENGINEERING CORPORATION, Bethpage, L. I., N. Y.

FIRST MARTIN AIRPLANE

24-PASSENGER TRANSPORT

THE CHINA CLIPPERS

MARTIN B-10 BOMBER

MARINER TRANSPORT

WHAT'S BEHIND THE NEW

Martin 202 Transport

THE MARTIN MARAUDER

Months of work by 250 engineers . . . more than a million dollars in engineering and development costs . . . help explain why the Martin 202 obsoletes all commercial transports of her class. And behind that stands the longest aircraft building experience in the industry . . . 36 years long. The history of Martin is a record of development of new and better types of aircraft . . . which time and again have rendered obsolete all comparable aircraft of their time. We show above a few of many Martin planes . . . which have helped write the record of aviation's progress. Now, out of this rich background, Martin presents the 202 . . . a plane which ushers in a new era of progress and profit for the airlines, with fares below first-class railroad rates for the flying public. We give you more facts about this great new luxury airliner in the box below.

THE GLENN L. MARTIN CO., BALTIMORE 3, MD.

MARS TRANSPORT

Martin
AIRCRAFT

Builders of Dependable Aircraft Since 1909

SOME OUTSTANDING FEATURES OF THE NEW MARTIN 202

- Cruises at a speed approaching 300 m.p.h. — upward of 100 m.p.h. faster than present day transports.
- On a 250 mile city-to-city hop, direct flying costs exclusive of operating overhead, are less than one cent per seat-mile.
- Various interior arrangements carry 30 to 42 passengers—in luxury unsurpassed by even the largest 4-engine airliners flying today.
- Utmost passenger comfort assured by comfortable, roomy seats, plenty of head room and leg room, large windows, modern heating, ventilating, sound proofing and lighting.
- Has far more cargo and baggage space (525 cu. ft.) than any transport of comparable size.
- Three large exterior doors and two large doors between passenger and cargo compartments, permit swift loading and unloading to cut waiting time at airports.
- Will utilize every new electronic device, including radar, to permit all-weather flying.
- Embodies such improvements as reversible-pitch propellers, heat anti-icing, laminar flow wings, tricycle landing gear.
- Flexible Mareng fuel cells cut maintenance cost and contribute to safety.
- Equipment is located below floor, easily accessible for servicing through exterior hatches.

- The Martin 202 is engineered specifically to meet Air Transport Association specifications. Not just designed for the airline but by the airline — custom-built by Martin — to the most exacting standards of the air traveler.

Revving Up

Slow flight at speeds as low as 15 mph. is viewed by John H. Geisse, assistant to the CAA Administrator for private flying, as a necessary development. "I leave it to your imagination to picture what it would mean to a pilot to be able to slow down to 15 mph. when visibility is poor, when he is temporarily lost and wishes to study a map, or when he desires to observe something on the ground," he told the SAE in Detroit last month. Explaining the helicopter captured the public's imagination not because of high speeds but because of slow flight and short landing, he said he knows of no basic aerodynamic law "which says we can not overcome this obstacle" in conventional planes. "Although we have spent considerable sums on air foil developments to secure higher lift coefficients without the use of power, we have spent practically nothing on combinations of air foil and power to attain slow speed flight," Geisse remarked.

More horsepower for the Republic Seabee will be announced soon. The four-place amphibian is being revamped to mount a 216-hp. Franklin. Wing struts are being added and the retractable landing gear is being modified.

El Paso Aircraft Sales Company is "tops" when it comes to servicing the cross-country flier, says Bertrand Rhine, Los Angeles, who was so impressed at El Paso on a recent trip that he wrote SOUTHERN FLIGHT. We don't hear enough airport praise, so we pass it on with hopes of hearing more.

(Continued on page 30)

PHEASANT HUNTING in South Dakota this season has attracted large numbers of sportsmen from the South, with charter operators doing a large volume business flying them to the hunting grounds. Here's Lt. Albert (Red) Probst of Dallas, former AVG P-40 pilot with Chennault in China, unloading part of a record bag from the cabin of a converted UC-78 at Love Field. He got his pheasants near Watertown, S. D.

SOUTHERN FLIGHT

Including MODERN AIRPORTS

Twelfth Year of Progress With Aviation

NOVEMBER, 1945 VOL. XXIV, NO. 5

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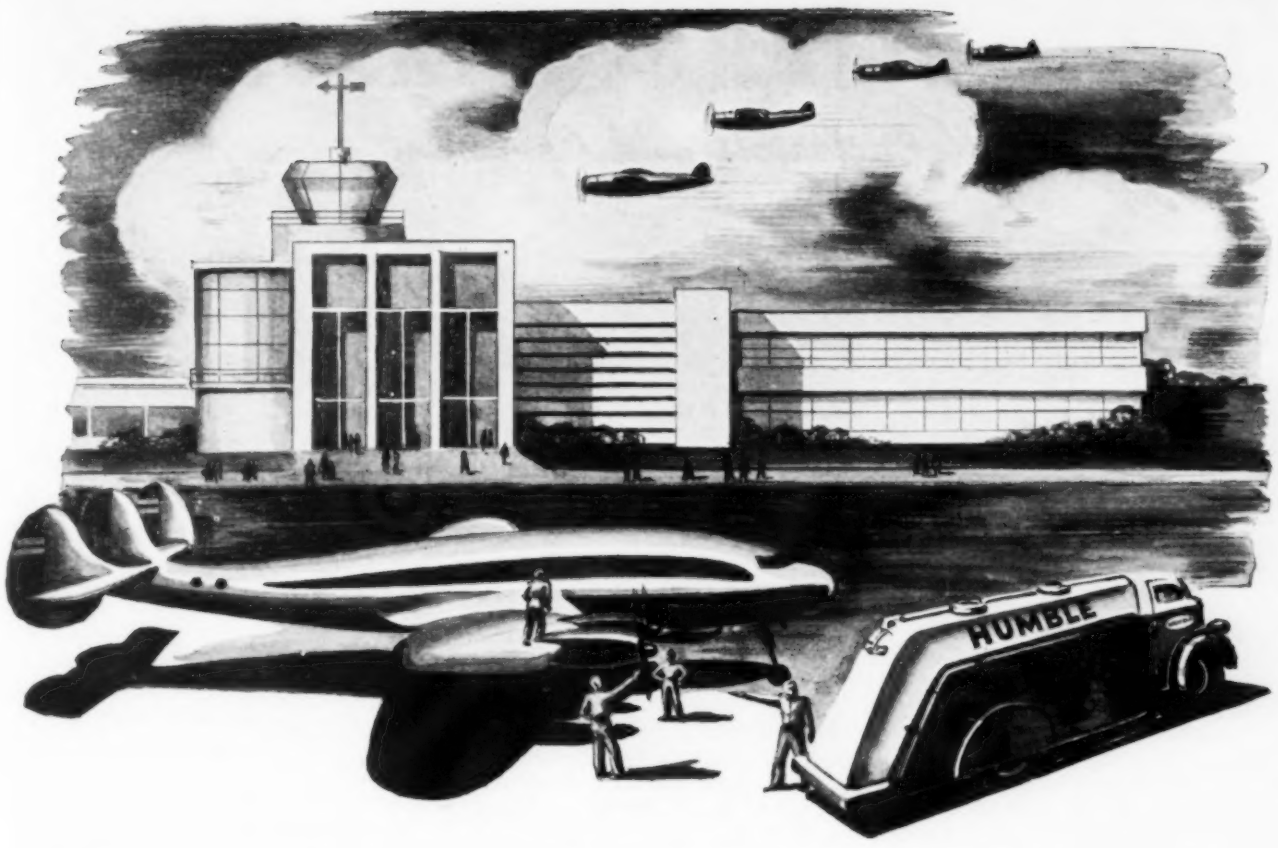


Wartime Skills *for the* Needs of Peace

In the process of making more than a billion gallons of 100-octane aviation gasoline for wartime use, the makers of Humble-Esso Aviation Products developed new skills which are today serving you.

War demanded the impossible—and in trying to achieve it a decade of technological improvements were compressed into a span of months.

Working side by side with aircraft engineers and designers, Humble-Esso technicians pioneered new high-octane gasolines, specialized lubricants for use in stratospheric cold or jungle heat, and many other aviation products whose quality made possible the performance of our war planes.

Out of these developments have come Humble-Esso custom-built fuels for every type of private and commercial plane from the largest to the smallest. Humble-Esso's continuing research promises you aviation products for peacetime use which are not merely *abreast* but well *ahead* of the swift pace of aeronautical progress.

HUMBLE OIL & REFINING CO.

ESSO

Humble-Esso Aviation Products

Yesterday Humble-Esso Aviation Products served the vital demands of war; today they serve equally well the needs of peace.

JUST AMONG OURSELVES

Editorials and Comment

THE BIG STEAL

WE always have gone down the line with the principle that municipal airports, built with taxpayers' money, should be operated for the benefit and use of all the taxpayers. We recognize the possibilities of some exceptions to this basic principle but those cases are so limited they can be disregarded in any general discussion of the subject.

We also admit that someday, in the unknown future, segregation of scheduled airline operations from non-scheduled flying might be desirable at certain heavily trafficked municipal fields near metropolitan areas. No one knows when that day will come—not even the self-appointed, empire-building prophets can tell us, although the mayors and city governments in many communities apparently believe the time is now and non-scheduled flying operations must be shoved out to the cow pasture so that the airlines can have exclusive use of multi-million dollar municipal facilities.

This kind of thinking is growing by leaps and bounds. We know of several specific instances in which mayors of large cities have already announced their intentions of dislodging fixed-base and transient operations from municipal airports so that commercial airlines might have exclusive use of the public facilities. These plans are being laid in spite of the fact that the present traffic load isn't within 50 per cent of the saturation point. With the drop off in military flying, just where do these omniscient mayors expect all the traffic to come from?

We know of one municipal airport on which private flying was prohibited during the war. Now that the war is over, traffic dropped from a peak of 25,000 operations in one month (largely military) to 19,000 and the figures are still sliding downward. The mayor, upon being petitioned to permit the normal resumption of non-scheduled operations (excepting student instruction) unequivocably stated that the present multi-million dollar municipal airport was primarily for scheduled operations, commercial and military, and that non-scheduled operations would be moved to a field yet to be constructed. The site of the new field, incidentally, is out in the "sticks," far from the residence and business office area of people who fly their own airplanes. In the years prior to the war, non-scheduled operations paid the major portion of the revenues to the city for the use of the municipal airport. Today, in fear of the mayor's warning, they can not expand and stand to lose hundreds of thousands of dollars of invested capital, just because scheduled air traffic *might someday* be heavy enough to justify segregation!

A peculiar aspect is found in the fact that airline operators are not requesting segregation. They know whose money goes into the construction of million dollar airports. They also keep well informed as to traffic developments and potential. They realize that the superimposition of military operations during the war, now on the wane, represented a far greater hazard to air safety than normal non-scheduled operations ever did. The main trouble has its roots in the city halls where the politicians are just beginning to "discover" aviation. But their plans to kick non-scheduled operations around and steal public facilities for the use of the few when traffic doesn't authorize such Hitlerian treatment, won't work. And it certainly won't stand up in the courts. That stipulation wasn't made when the people voted bonds for airport construction.

Scheduled air transport and non-scheduled aviation are in the same boat. There need be no conflict between their several interests. And all of us must stand guard against the possibility of politicians dividing the two segments of aviation into warring camps.

In view of these facts, we are convinced that all aviation interests should get together and work out solutions to their local problems in a co-operative manner. This formula never has failed. Airline representatives, fixed-base operators, private owners, military and CAA officials always have been able to work out knotty problems in the past. They can do so now if municipal officials will call them around the conference table and deal in facts instead of baseless theories propounded by people who don't know what they're talking about.

☆ ☆ ☆

OPPORTUNITY FOR SALESMANSHIP

FAR too many of us in the aviation industry consider the airplane primarily as a passenger and mail carrier; and although it excels in those capacities, we are inclined to agree with a small but vigorous school of practical airmen who hold to the opinion that we've barely scratched the surface regarding potential uses of the airplane and mankind's need for the untold number of jobs present day aircraft can be applied to with utility and economy.

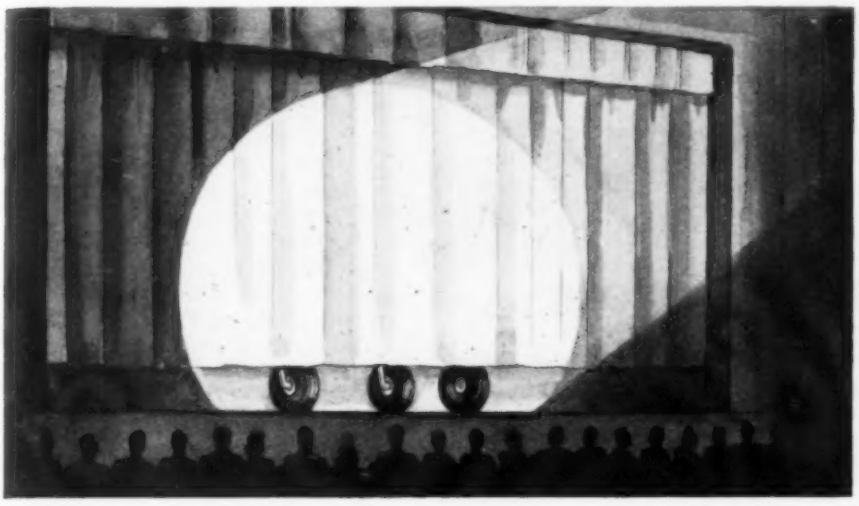
The record speaks for itself. Consider such partially explored realms as universal airmail and air cargo pick-up services, which can provide air services to all of the people instead of to a few millions residing in metropolitan areas; the planting of seed by airplane (covered in these columns last March); the extension of insect control and crop dusting operation into all branches of agriculture; the patrol of such important items as pipelines, forests, levees, international borders, and fences on the range; universal adaptation of aircraft, especially since the birth of the helicopter, to emergency life-saving operations, flying ambulances, peacetime Coast Guard duties and related fields. Aerial mapping and survey work, real estate development and aerial advertising also may be listed as a large, undeveloped market for aviation.

With the end of the war, this nation finds itself in a remarkably liquid position to take full advantage of these tremendous potentials. We have more facilities and know-how, more pilots, mechanics and technicians, surplus airplanes, engines and accessories than we know what to do with. From the ubiquitous "putt-putt" to the specialized helicopter and gargantuan winged freighters, our aviation resources in flying equipment alone runs into the billions of dollars. And at this writing, the industry is rapidly converting to the production of airplanes for peaceful pursuits and promises air-

worth waiting for NEWS

No. 11

THE ELEVENTH OF A SERIES OF INFORMATIVE ADVERTISEMENTS ABOUT THE NEW CULVER.
PUBLISHED BY THE CULVER AIRCRAFT CORPORATION, WICHITA 1, KANSAS



YOU WON'T HAVE TO WAIT MUCH LONGER!

The past few years have been years of waiting . . . waiting for new airplanes, new automobiles, nylon stockings, washing machines, radios, electrical appliances, and a thousand other articles which have been unavailable in the war period.

Yes, "waiting" has been a much overworked word . . . and Culver for some months has been talking about the New "V" Model which "will be worth waiting for." And when we said "worth waiting for" we meant just that. For it will not be an old airplane "cleaned up," nor an old design with "under the skin" improvements. We could have "fixed" up the old Culver a little . . . new paint job, larger wheels, and a few other minor changes, and it still would have been the fastest airplane for its given horsepower on the market; but we felt the flying public deserved more than a clean-up of a design eight years old.

But Culver will keep faith with the flying public. And Culver will keep faith with the statement that its new ship will be "worth waiting for"; for the new Culver incorporates all of the concentrated design, engineering, and production experience of the crowded war years. *That new "V" Model Culver is flying at the factory right now;* undergoing every test and flight condition, every quality inspection that Culver engineers have used on three previous designs for the Army and the Navy. So that when that product reaches the hands of the flying public it will be tried and proved, and will measure up to the Culver standards of performance, stability, and quality.

What, in a general way, can you expect in the new "V" Model Culver?

1. Utility . . . the ability of an airplane to get you somewhere cross-country faster, cleaner, safer, more comfortably, and at less cost than by any other mode of transportation.

2. Externally stressed skin low wing monoplane of the same rugged wood construction that has given Culver such a splendid reputation with Army and Navy ground and flying personnel.

3. Electrically retractable tricycle gear with the Mooney power unit which has proved so safe and sure on Army and Navy models.

4. An anti-stall characteristic, thus eliminating spins.

5. Simplified controls, allowing the novice and the beginner to fly safely.

6. Cruising range vastly in excess of the 480 miles of the pre-war Culver.

7. Ample pay-load and baggage capacity.

8. Clean aerodynamic design to Culver's standards, which guarantee maximum performance for a given horsepower.

9. Fuel injection engine eliminating carburetor icing.

10. Full electrically operated flaps.

11. Factory built-in provisions for two-way radio.

12. Individually adjustable air-foam seats.

13. Larger and wider deluxe sound-proofed cabin with a new point of entrance.

14. Many refinements and innovations too numerous to mention.

These are some of the general specifications. In the next advertisement Culver will give specific performance data and specifications of what we feel will be the finest quality light airplane ever to be introduced to the flying public.

It will be a short wait until you can buy and fly the new "V" Model Culver; but we still say that new airplane, which is new in every sense of the word, is definitely "worth waiting for."

FOR THE LATEST INFORMATION WRITE CULVER AIRCRAFT CORP., DEPT. SFK, WICHITA 1, KANSAS

SOUTHERN REPRESENTATIVES

JIMMIE MARSHALL
Beaumont-Dallas, Texas

OTIS EDGERTON
Alexandria, Louisiana

PAUL L. CROMELIN
Augusta, Georgia

craft of every size, horsepower, type and description for almost any flying job the human mind can conceive. Even the financial resources exist in sufficient quantity for every industry, profession and government service to create the largest aviation market in history. The only missing link is salesmanship — we've got to sell the airplane, specialized and otherwise, to the people who, first, can adapt the airplane to their particular fields of endeavor, and second, who can afford to purchase and maintain their equipment.

Sales effort is the only catalyst that will work in bringing about the richest totally-new industrial market of the postwar world—that of commercial aviation. Sales effort can and must be developed if we are to unleash the dammed-up facilities, equipment, energy, know-how and human resources ready to be put to work.

We can't think of any field of relatively new endeavor with the potential employment implications postwar aviation offers. There's much talk but little action in absorbing the air veterans of this war, now returning home with honorable discharges. Are their wings to be clipped? They need not be if we can learn how to sell the non-flying public as well as we sell each other.

☆ ☆ ☆

HANDS ACROSS THE BORDER

THERE'S a lot of talk these days about the brilliant future of air travel between nations and the important role the airplane will play in promoting international good will and in stimulating foreign trade. Ironically enough, a large portion of this super-optimistic language emanates from Washington, where the State Department and the Bureau of Customs still cling to horse-and-buggy regulations that obstruct the natural development of air travel and commerce between the nations.

Let's take a specific example to prove what we mean. Not long ago a friend of ours wanted to fly his airplane to Monterrey, Mexico. His most direct route called for crossing the border at Laredo, Texas. Upon arrival at Laredo he was told that it would be necessary to get official permission from the Commissioner of Customs in Washington before he could fly into Mexico. He had heard of on-the-spot clearance at other points along the border and couldn't understand the apparent change in the rules. After beating his head against a wall of red tape, he gave up and flew to Brownsville, where, thanks to the generous assistance of Braniff Airways personnel, he managed to receive clearance without going through Washington. He not only lost several days unraveling the complicated system for flying into Mexico but he was forced to fly over 500 miles off his route to cross the border.

Another incident, which we understand is repeated frequently, is the case of a certificated Mexican feeder airline operator who came into the U. S. to purchase some used airplanes for his expanding operations. It required an entire month, two. Philadelphia lawyers, a score of long distance calls and finally political pressure on the State Department to get one airplane out of the country. Our Mexican acquaintance told us that from now on he thought it would be better for him to purchase his airplanes in Canada, where export papers and proper clearance can be accomplished in a couple of hours. In addition, he said, ferry permits for passage across the United States are arranged for quickly and easily by the Canadians.

This is about as ridiculous a situation as we can imagine. The United States provided Canada with airplanes during the war on lend-lease and our Mexican cousins find it easier to purchase them in Canada than here while practically every airport in the U. S. is loaded to the fence line with our own surplus stocks of airplanes, rotting away in the wind, sand, rain and sun.

We've been south of the border enough to know that our Latin American neighbors want to do business with us, especially aviation business.

It seems to us that a simple method could be worked out that would protect the interest of both nations, yet facilitate travel and trade between the United States and Mexico. The airlines have managed to expedite their operations and custom clearances but even here some improvement is possible. Perhaps it is almost criminal to suggest the assignment of new duties to understaffed and over-worked CAA field personnel, but those who are based along the border could assist if present barriers were broken down and some responsibilities of clearance could be assigned to the CAA men by the State Department and the Customs service. In any event, all the agencies involved should eliminate the present red tape and devise an expeditious formula for promoting aviation trade and traffic between this country and Mexico.

Is it too optimistic to ask for simplicity and uniformity from the bureaucracy we've created over the years? We don't think so because the stakes are high enough if we can untangle the mess that is now stifling the natural growth of aviation trade and travel between nations on this hemisphere. The job should be initiated by our domestic aviation organizations and a great deal of progress might be made at the forthcoming aviation conferences, including the National Aviation Clinic this month in Oklahoma City. No matter where the campaign starts, we should get the ball rolling and force the issue at once.

☆ ☆ ☆

GOVERNMENT COMPETITION

IF you think you've seen everything regarding absurd government surplus policy, just take a gander at this one—Uncle Sam is now selling lacquered dope in small lots at ninety cents a gallon, delivered!

The self-respecting aircraft shops and airplane owners won't have anything to do with government surplus dope but there are some rat operators who will and a lot of well meaning folk who know nothing about the important technical aspects and peculiar characteristics of dope that has been stored in the open and kicked around in all kinds of temperature. A lot of operators had some mighty bitter experience with dope they received from the military services during the war. Thousands of dollars have been lost and a terrific number of jobs have had to be completely done over because of bad dope. Many airplane coverings were actually ruined during the war emergency.

Perhaps the worst feature of the government's announcement that they will sell dope at ninety cents a gallon, delivered, is the threat that they will do the same with all other surplus equipment, parts and accessories. If they do, the very existence of our old-line, dependable and legitimate aviation supply houses is threatened.

It's another case of Uncle Sam circumventing the disposal of surplus through natural and established trade channels. Unless we stop it now, we'll never get through paying for the tragic errors being compounded by the nitwits who govern surplus disposal policy. ★ ★ ★

This is the fourth in a series of advertisements concerning the future of Aviation . . . in America

Needed in a Sky Strong Nation

IN cooperation with John Q. Citizen, American Business and the Aircraft Industry, Government, too, has a major role to play in making the United States a great peace-time Air Power, just as it built a great war-time Air Power. But the responsibility of maintaining National Security and Permanent Peace by means of a highly developed aviation system rests not alone with our Federal Government. Every state and municipality has a cooperative job to do.

Already many plans are under way for perfecting airport facilities and equipment; building state and municipal highways to facilitate quicker and more convenient transportation to and from air fields; developing international air transportation; setting up training programs and the study of aeronautics in our school systems; creating commissions charged with promoting aviation wisely and for the benefit of all; and formulating laws and regulations to make the airway the safest of all roads to travel.

These are important programs. Effective promotion of them at all levels of Government can be a major contribution to the welfare and security of our air minded Nation.

We at Bell Aircraft, as part of the Aviation Industry, pledge ourselves to continue the research and scientific achievements which have produced many of our outstanding and victorious air weapons, in order to make the airplane as obedient a servant in time of Peace as it has been a defender of World Freedom in time of war.

BELL *Aircraft* **CORPORATION**

Buffalo 5, New York

© Bell Aircraft Corporation

PACEMAKER OF AVIATION PROGRESS

The Birdmen's Perch

By *Major Al Williams*, ALIAS, "TATTERED WING TIPS,"
Gulf Aviation Products Manager, Gulf Bldg., Pittsburgh 30, Pa.

Well, here's that postwar they've all been talking about.

So we've been looking at the postwar planes we read about for four years. And we like 'em!

Of course, we'll stick to the powerful Gulfhawk for our serious flying. But for lazing away week ends, and such, we want one of the little jobs.

There's that sky-skooter made out of the tear-drop tank of an F4U. An honest-to-goodness airplane which lands under 40, cruises better than 90, and will probably cost less than a thousand bucks! We like her!

We like the flaps on the new Stinson that let you sink in from wa-a-y up. And the amount of baggage you can toss in without grounding the plane.

And those swift, low-wing jobs from Texas . . . little hummers that get you there buckety-buck.

We like 'em all so much that by the time we decide which one we like *most*, they'll all probably use atomic energy!

Meanwhile, the new planes seem to get as much kick as the old ones out of that Good Gulf Aviation Gasoline—still the most powerful stuff we know of.

DONT FORGET DEPT.

Gulfpride Oil is the only oil refined by the Alchlor Process.

The Alchlor Process is, in effect, an *additional* refining of oil already refined.

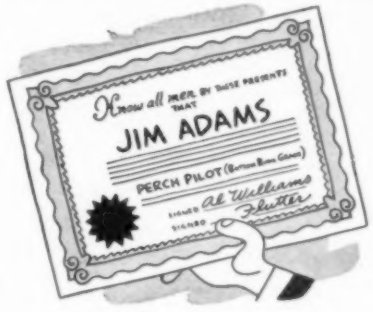
Consequently, Gulfpride Oil has *fewer* of the difficult to extract carbon - forming and sludge-making hydrocarbons and *more* of the tough, friction-preventing hydrocarbons.

Use it!

LITTLE KNOWN FACTS DEPT.

No, we didn't abandon this department.

We still offer handsome commissions as Perch Pilot (bottom rung) for Little Known Facts About Well Known Planes. We still promote you to Senior Perch



Pilot after we've accepted 5 of your "Facts."

We just didn't have room for "Facts" last month.

This month, the whole department is the work of one man: Perch Pilot (br) Jim Adams, of Toledo. He sent in four usable "Facts" with proof, which means he has only one more to go to become our first Senior Perch Pilot!

"The spark plugs in a single engine cylinder flash more than 81,000 times on a flight from New York to Washington!"

"A 2000-hp. radial engine has as much power as a freight locomotive; weighs about as much as the locomotive's wheels!"

"In less than 3 hours, an 18-cylinder radial uses more air (for combustion) than you could get in an X-type blimp!"

"The cooling area of a certain 14-cylinder radial is greater than the area of 2 bowling alleys!"

FLUTTER'S WISDOM

Oh, Gulf Aviation Gasoline
Is the stuff for your flying machine!
It gives you a boost,
When the throttle is goosed.
—Keeps engine performance serene.

Can any of you Perch Pilots help our poetic pipsqueak with a short verse on G.A.G.?

Al W.

Gulf Oil Corporation and Gulf Refining Company...makers of

GULF **GULF AVIATION PRODUCTS**

BACK TO THE BICYCLE SHOP

Airplanes earn in the air, lose in the shop. Good maintenance makes money, for one ship or a fleet. Planes in service seem to always need something—but why go into a panic over replacements or parts? . . . Remember the Wright brothers? They had it really rugged! When their baby busted a gusset or splintered a sled runner, Orville and Wilbur had to go back to the bicycle shop and whittle a new one! . . . While all you need to do is phone, wire or write Air Associates. And out of stock, or on short order, the parts come up pronto! . . . Make AA your supply source and life will be simpler.

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The five AA warehouses are fixed bases close to every manufacturer, within a day's distance of most of the U. S. Our private teletype system locates every item on your order in a hurry. Every order, large or small, from major airline or private pilot, gets prompt service and shipment. Prices are standard . . . One supply source, one order, one invoice, saves grief, worry, shop time, reduces revenue loss, prevents problems and paper work . . . Remember the name and nearest address—for your best single source of supply . . .

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Our Radio Department is under the direct supervision of FACTORY TRAINED Radio Engineers who are experienced in electronics. *For your own safety, radio repair and maintenance takes specialized equipment and men who know what they are doing.*

Here at Aircraft Sales, radio service, whether frequency check, trouble shooting, complete overhaul or installation of a new radio is handled by competent radio technicians with the best of the new test equipment to serve you.

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AIRCRAFT SALES CO.

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AIR REPORT

☆ SIGNIFICANT TRENDS IN THE NEWS

CAA Predicts the Future

Recommending Federal expenditures of $100,000,000 annually for a ten-year civil aviation program, the CAA predicts a 30 per cent annual increase in aircraft leading to a total of over 400,000 civil airplanes in use in the United States by 1955. "A 1955 civil aviation industry employing 759,000 more people than in 1939, and with dollar volume more than tripled from the 800 million dollars in 1939, is the confident prediction of the CAA," says a 147-page report released last month by the agency, which added: "This goal, however, can be achieved only if Federal aid is provided for airport construction, training, research and airways improvements." Other CAA predictions for 1955 include: A good family-size airplane should sell for $2,500 or less "if manufactured on the mass-production basis that 400,000 registered aircraft would make possible"; 2,800,000 families will be able to afford airplanes; 280,000 airplanes will be used for personal business and recreation, 40,000 will be owned and operated by business concerns and 80,000 planes will be used commercially in crop dusting, aerial photography, rentals, instruction and other non-scheduled operations; domestic and international airline operations combined will require a fleet of about 1,000 passenger and 200 cargo aircraft. A comprehensive review of the CAA's forecasts and statistical data will appear in SOUTHERN FLIGHT next month.

★ ★ ★

Peacetime Air Power Needs

After a thorough study, an air co-ordinating subcommittee representing the War, Navy and Commerce Departments has detailed figures in a significant recommendation to Congress for adequate air preparedness based on the maintenance of an aviation industry approximately twice the size of that of 1940 with an annual production volume 5 per cent of the 1944 level. Aircraft production levels for a typical peacetime year should approximate, according to the voluminous study, the following: Military Airplanes: Number, 3,000 to 5,780; airframe weight, 30,700,000 to 60,100,000 lbs.; estimated cost, $750,000,000 to $1,400,000,000. Commercial Transports: Number, 325 to 475; airframe weight, 6,300,000 to 9,300,000 lbs.; estimated cost, $125,000,000 to $175,000,000. Private Airplanes: Number, 20,000 to 45,000; airframe weight 18,000,000 to 35,000,000 lbs.; estimated cost, $72,000,000 to $120,000,000. Total Annual Production: Number of planes, 23,325 to 51,255; airframe weight, 55,000,000 to 104,400,000 lbs.; estimated costs, $947,000,000 to $1,695,000,000.

Hits with six atomic bombs of the size which blasted Hiroshima could obliterate all important aircraft plants in Southern California, and fewer atomic hits on transportation and other utilities could eliminate that entire area as a major source of U. S. air power, the committee warned in urging dispersal of the industry.

★ ★ ★

Hughes Counters Critics

Answering charges aired recently by a Washington newspaper and mentioned in these columns, an official of Hughes Aircraft Company denied that Hughes' huge H-4 flying boat project has been a "fiasco" and claimed Hughes never had a "DX" Army experimental plane on paper or in the air. Hughes is completing two secret F-11 photo-reconnaissance planes for the AAF, part of an order for 100 placed with the firm in 1944. The official told SOUTHERN FLIGHT that "no 'DX' ever crashed," as reported. "Neither did our very successful D2, which fathered the F-11," he added. "After its test flights observed by AAF in 1944 it was unfortunately destroyed by fire in its hangar on the Mojave desert." The official did not comment on Washington reports alleging Elliott Roosevelt influenced the AAF to order photo planes from

Bendix Flightweight Radio

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Isn't it fun to forget airport flying and head out for new views and pleasures with the whole family—say a weekend at a southern race track! Bendix FLIGHTWEIGHT* Radio enables you to widen your horizons by simplifying cross-country navigation—contributes to your flying relaxation and confidence.

Built by Bendix, the FLIGHTWEIGHT V.H.F. (very high frequency) Radio has definite natural advantages over ordinary radio equipment—freedom from atmospheric static and greater reliability and performance under all flying conditions. Bendix *earned* the "greatest name in aircraft radio" as a specialist, for years, in the manufacture and development of aircraft radio equipment for the big airliners and military. Built $200,000,000 worth in one year alone!

Be sure and get Bendix advantages—buy FLIGHTWEIGHT for compactness and efficiency! Ask your airport dealer about it or write direct to Bendix Radio Division, Personal Plane Sales.

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The Greatest Name in Aircraft Radio

Write for free booklet "For Wider Horizons"—tells how to get more fun out of flying.

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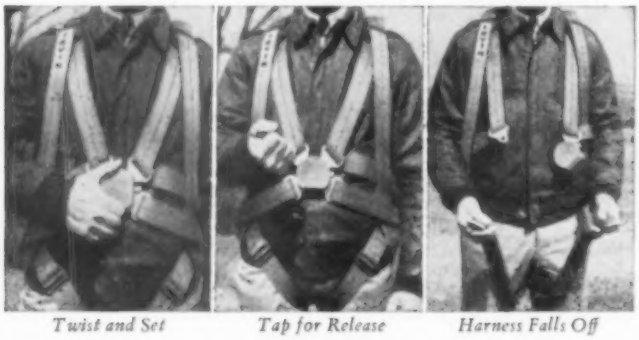
IRVIN Air Chute

"SINGLE-RELEASE" Harness

UNITED NATIONS' FLYERS
are using it for
SAFER LANDINGS

A one-hand turn and a tap on the single frontal disk instantly releases the harness . . . leaving the flyer entirely free. Accidental release is impossible before disk is "set" for action.

All United Nations' Air Forces for years have used IRVIN as standard equipment . . . and now the Irvin "Single-Release" harness is acknowledged as superior for all landings. IRVIN, as always, leads in Safety.



Twist and Set *Tap for Release* *Harness Falls Off*

IRVING AIR CHUTE CO., Inc.

Main Office: 1670 Jefferson Ave., Buffalo 8, N. Y.

Complete Factories in Buffalo, N. Y., Glendale, Calif. (1500 Flower St.), and Lexington, Ky., U. S. A. . . . Canada, England and Sweden . . . All Serving the United Nations' Air Forces.

BUY MORE WAR BONDS

Hughes, but denied the President's son had any part in financing, designing or construction of the big Hughes flying boat, which hasn't flown yet, although $18,000,000 in DFC funds have been used for it over a period of three years. "Numerous responsible leaders in the aircraft industry claim that even before it is ready to fly, the research and expenditure have already been justified," the Hughes spokesman told SOUTHERN FLIGHT. He also denied, as reported last month, that the H-4 suffered a set-back from newly-developed wing difficulties.

★ ★ ★

Part 03 Out Soon

Recent revisions in Part 03 of the Civil Air Regulations, covering new airworthiness requirements for personal aircraft, will be released soon. Largely responsible for the modernization of 03 and its complete separation from the air transport category is a small, hard-working group of engineers from the personal aircraft factories. The revisions, which in effect amount to a major overhaul of the regulations governing design, performance and construction of ATC airplanes, eliminate many useless minimum requirements that hamstrung designers in prewar years. Observers close to the new philosophy behind revised 03 predict that all performance figures will be certified by the CAA shortly after the first of the year.

★ ★ ★

Aircraft Sales Policies

Some manufacturers of personal aircraft are incorporating exclusive representation clauses in their distributor and dealer contracts. At this writing both Luscombe and Cessna plan to follow that policy. On the other side of the fence are Republic, Stinson, Aeronca, Taylorcraft, Culver and Piper. Nearly all of the companies plan to send factory representatives out into the field. Considerable time, thought and effort are being devoted to the removal as much as possible of the prewar suicidal practice of price cutting, which knocked out legitimate commissions and made "dealers" out of one-plane purchasers. The manufacturers hope to build up financially strong and reputable distributorships and dealerships, leaving no stone unturned to guarantee profitable operations for their sales representatives, even to turning over all service, repairs and accessory sales previously handled at the factory.

★ ★ ★

Wood and Plastics for Speed Planes

Wood and plastics are receiving a lot of attention from the research laboratory of Curtiss-Wright Airplane Division. Research projects include other aircraft materials, improved aircraft structures, and numerous projects associated with high-speed airplanes. The government's basic aeronautical research agency, the NACA, is sponsoring a large amount of research in the field of wood and plastics for aircraft. Recently "sandwich" materials have aroused considerable interest. The sandwich materials consist of super-thin sheets of steel, aluminum, or high-strength glass fabric bonded to balsa wood or foamed plastic. According to the NACA, an experimental airplane fuselage constructed of plastic sandwich materials is 67 per cent stronger with almost the same weight than a similar fuselage of metal construction, and NACA says such materials may lead to aircraft construction without internal supporting members.

★ ★ ★

Truman to Cancel Clinic Address

President Truman's previously announced plans to appear before the opening session of the National Aviation Clinic in Oklahoma City November 19 probably will be canceled by the time this issue of SOUTHERN FLIGHT is in the mail. Prime Minister Attlee is reportedly due to arrive in Washington from London the week before the Clinic opens. In addition to serious international problems, the President is bogged down with domestic issues now reaching the acute stage. Clinic officials are expected to substitute a v. i. p. as a pinch hitter, probably Doolittle.

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Our Aeronautical Department invites your inquiries on A-12 Gyropilot installations.

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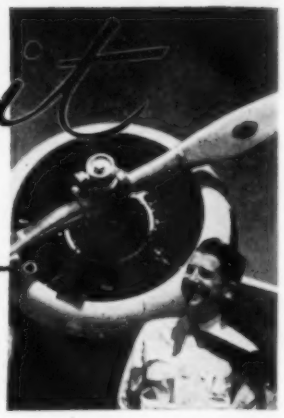
THE Sky's the Limit

BY BILL GREEN



One municipal airport is enough for the average city. . . . Private capital is providing additional landing facilities for Tulsa. . . . Merchandising can help operators lower flying costs by increasing airport revenues.

Airports and Private Enterprise

FOR many years we have been fighting for free enterprise, especially as compared with any form of government ownership of public services. Many times we have felt that subsequent results completely corroborated and sustained our reasons for preferring free enterprise.

In the last two or three years when most laymen believed there would be a tremendous boom in aviation, especially in private flying, there have been many hysterical outbursts demanding additional municipal airports. This was true in Tulsa. Although the Tulsa Municipal Airport is one of the finest in the world and has every conceivable facility right on the field, and, in spite of the fact that it has a duplicate system of runways and has never been used to capacity, there were those who wanted another municipal airport operated at the taxpayers' expense and controlled by municipal officials.

Somehow or other, the Tulsa delegation was never able to bring sufficient pressure to get the airport built and that brings us up to this interesting stage.

The W. E. Brown Airport was recently dedicated at Tulsa. It occupies the site formerly used by the Garland Airport and later by the Tulsa Commercial Airport before it moved to its new location.

The W. E. Brown Airport has a number of hangars, a large shop which they are completely outfitting, a very nice looking restaurant, clean restrooms, a control tower with the very latest Waller equipment, etc. The field presently is all sod. Having flown off this for years, we know there has seldom been a condition of weather that made it difficult or dangerous to use.

It is quite likely that Mr. Brown has spent somewhere between $100,000 and $200,000 on this field. He indicates that as fast as possible, he is going to do other things. Already they are lighting the main north and south runway.

A. M. Horrall, for many years owner of the Tulsa Commercial Airport, moved about six years ago to his new location, reached in twelve minutes from the center of Tulsa. This field has three large 100 x 100 ft. hangars, and a shop hangar, and are building four more hangars at the present time. We were out there recently and saw tremendous earth moving machines leveling off here and there and building foundations for the hangars. From the program Mr. Horrall told us about, we believe that he will have one of the finest private operations in the whole country. From newspaper accounts, we see that his company recently incorporated for $500,000.

There are many interesting implications to the situation. First, both Horrall and Brown are private pilots of many years' experience who have made their money in other enterprises. Both of them are well heeled and they know how to conduct business on formal business principles. We think that aviation is bound to be benefited by dilution with people trained in other businesses. Second, Tulsa will have three airports equipped with adequate hangars, adequate restaurants, adequate mechanical facilities and adequate, financing. Only one of them is operated at municipal expense. Third, the competition between airports engendered by three separate and distinct personalities engaged in their management will undoubtedly be beneficial on all sides. This competition will likely result in a reduction of storage charges, complete fairness and equity in the matter of charges for mechanical service, gasoline, oil, etc., and an improvement in facilities wherever desirable.

A new principle for private airports is being incorporated in these Tulsa operations. We believe it is the trend elsewhere also. These operators have the notion that in order to provide complete services for their patrons, they must permit many private operators on the field, each taking his own chance of making a success of his particular service. We think this is a wonderful notion and will undoubtedly bring to the airport such things as good mechanical service, good radio service, good charter and training services, good restaurants, a number of sales and service agencies, etc. People who have operated off such airports as Roosevelt Field, Chicago Municipal, St. Louis Municipal, Love Field at Dallas, Howard Hughes Field at Houston, and others where many independent operators were permitted to render their services on the same municipal airport, will appreciate the advantages to be gained from private airports which utilize the same principles.

Horrall has an idea which is extremely interesting. He is providing a number of modernistic offices or business spaces which he proposes to rent or lease to any reputable individual or company desiring to offer service to the aviation people. He especially hopes to provide space for veterans who wish to remain in aviation and who wish to operate sales agencies, Link trainers, insurance agencies, stores, financing agencies, charter or other services.

At any rate, we feel that this progress being made in Tulsa is a complete vindication of private enterprise as compared to municipal operations and we feel there needn't be more than one municipal airport in each locality.

The spirit of free enterprise is so integrated with the American way of life that most people actually prefer to deal with a private setup rather than with many municipally-operated concerns. This is not to disparage municipal airports. Some of our finest airports are municipal fields and they are run as nearly faultlessly as it is possible to do. However, people still like to support the individual and feel that they get more for their money that way.

★ ★ ★

Lowering High Costs of Flying

We were talking with some people the other day about the whole general price structure and cost of aviation. Some time ago, we indicated that we did not expect a tremendous private ownership of aircraft, as even the cheapest aircraft under existing price schedules cost more than most people can afford. Generally, higher wages do not permit many more people to own expensive luxuries as the cost of

(Continued on page 66)

TWA

POINTS THE WAY

WITH PIONEER

AUTOMATIC PILOTS

. . . on its New Fleet of

Lockheed Constellations

Congratulations to T. W. A. in selecting Pioneer* Automatic Pilots, flight and engine instruments for its entire fleet of Lockheed Constellations.

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ON THE WAY

The new Aeronca "Chief" will be in the territory in November, closely followed by the "Chum" and other Aeronca models yet to come.

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ABOUT DELIVERY

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Our advice is: Order Now!

First completely new production lightplane with many new features — exceptionally favorable reports from dealers and customers who have had opportunity to fly it.

AERONCA SERVICE: No more maintenance delays! Every dealer carries a complete stock of interchangeable parts so you can keep your postwar Aeronca in the air for maximum service.

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The idea of promoting airstrips all over the country grew naturally out of Aeronca's long experience in the field. They knew that personal planes need landing fields and service so you can fly everywhere—just as cars needed roads and service stations so everyone can drive.

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Aeronca's new plane designs fit personal needs, too. Equipment to suit your taste. 2-passenger to family capacities. Latest equipment, like tricycle landing gear and electric starters on some coming models. All easy to buy and easy to fly! Complete descriptions in "Aeronca—the Plane You'll Want to Fly." Mail 10¢ for your copy to Aeronca Aircraft Corporation, Dept. SF-11, Middletown, Ohio.

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For a real tailwheel value, the Heath Lifetime assembly is tops. Highest prewar quality materials and workmanship at even less cost than before the war.

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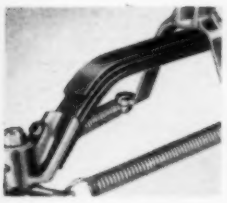

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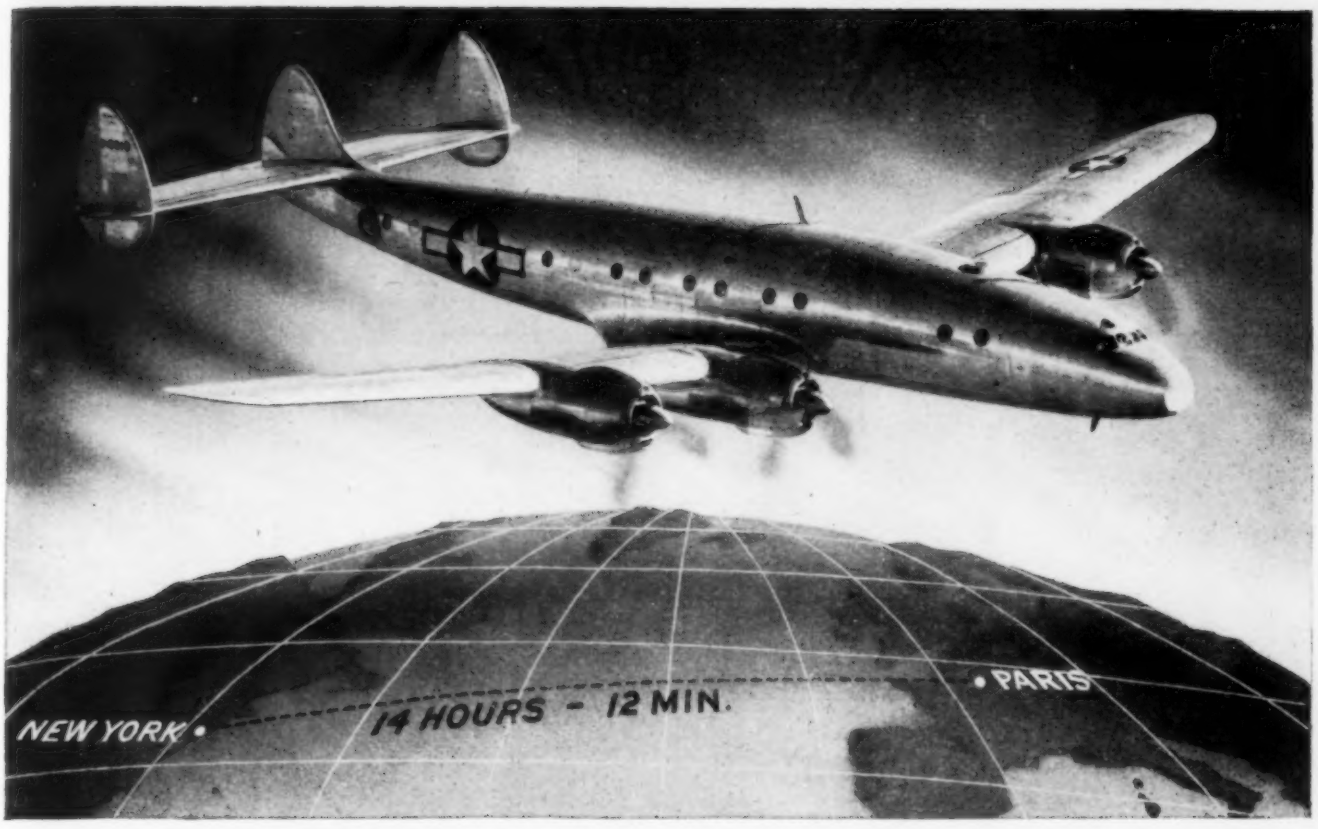

OCEAN-SHRINKER
-- 45 Tons of Speed

On May 20, 1927, a young unknown named Charles A. Lindbergh climbed into a tiny monoplane at New York and 33 hours and 30 minutes later landed at Paris, France. Immediately he became a world-wide hero.

But on August 1, 1945, the ATC's C-69 Lockheed "Constellation" made a casual 3,600 mile N. Y. — Paris flight in 14 hours and 12 minutes breaking all trans-Atlantic transport records. Yet this hardly rated a mention in the newspapers.

The progress of aviation is so swift that new records are made almost daily as new designs and greater power plants step up speed and efficiency. Helping the C-69 to this newest record were four great Wright engines developing 2,200 h.p. each . . . and each is equipped with CECO carburetors.

As new records are broken and greater aviation advances are made, Chandler-Evans will continue to use all its war-proved engineering and production resources to keep pace with America's aircraft engine builders.

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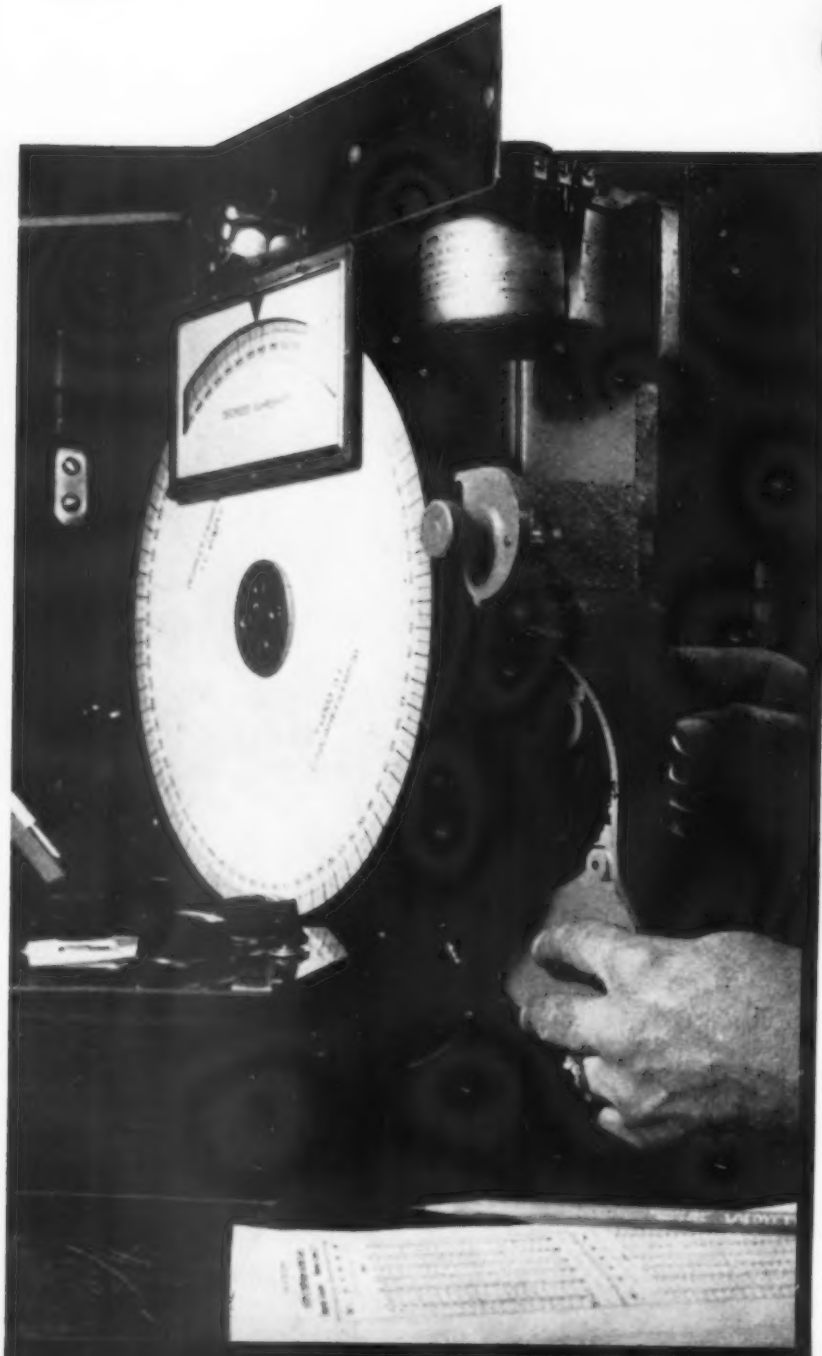

PRECISION CONTROL at all times is the watchword of the Guiberson heat treating department. The electronic type potentiometer shown here is being checked by a Guiberson technician in the precision instrument maintenance room. Such checking is one of the many systematic procedures for the accurate control of quality that are available to you at Guiberson's to help quickly and accurately produce your sheet metal requirements. Engineering, tool making, die making, forming, heat treating and final assembly—all are available at Guiberson's to meet your immediate production needs.

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STINSON VOYAGER 150

There's no standing still at Stinson!

Your new Stinson Voyager will take to the air with a 150-h.p., instead of a 125-h.p. motor, as originally promised. Yet, there's *no increase in list price* for this 20 per cent increase in power.

And more good news! The new Stinson Voyager 150 will soon be rolling off the production lines.

Here's a roomy, four-place ship that has everything you've always looked for. The Voyager 150 has power to spare. And its high-altitude performance (1350-ft. take-off at 8700-ft. altitude . . . and a service ceiling of 14,000 ft.) makes it a versatile plane anywhere. With its 500-mile range, its extra comfort, and low operating costs, this Stinson is a stand-out among cross-country planes.

The Voyager 150 will take you there and back in a hurry. It has a top speed of 133 m.p.h. and a cruising speed of 125 m.p.h. And even on long, cross-country trips, you'll fly comfortably.

The scientifically shaped, richly upholstered seats really let you relax . . . in the soundproofed, ventilated cabin of the Voyager 150. A cabin heater keeps you warm, no matter how cold it is outside.

In addition to the traditional Stinson stability, and proven wing-slot feature, the new Voyager 150 has a new tail design and other features to make it even more spin-resistant. And its flaps make even the shortest runways seem comfortably long.

The seven-foot landing-gear tread, steerable tail wheel, and push-button parking brakes give this Stinson extraordinary ground safety.

You'll have the assurance, too, that this plane is backed by Stinson's 20 years of experience in building quality planes, and by the vast research and manufacturing facilities of Consolidated Vultee Aircraft Corporation.

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Get a flying start to business leadership, step into top earnings quicker, by making your business calls the *modern* way . . . in a swanky new *Swift*. Forward-thinking business men who are flying profitably today enthusiastically tell of business days saved, new sales records set, profit-making contracts closed, traveling expenses slashed, and more time at home with the family.

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And the new *Swift* gives you *everything* it takes to make your ***business*** flying profitable. It's *all-metal* . . . sturdy, weather-proof, easy to maintain. It has plenty of power and rugged stability for flying in any weather thats safe for *any* airplane. It's simple and easy to control . . . restful to fly, and there is plenty of speed, power, and range for safe, easy cross-country travel.

Write for the records of business men who have flown their way to leadership, men with years of profitable business flying behind them. Read these records, and you will realize that owning and flying a new *Swift* can be one of *your* most valuable business assets.

Be one of the fortunate 4,000 who will own a new *Swift* in 1946. Place your order with your *Swift* Dealer NOW.

Swift Flying Means Profitable Flying

The Swift

Made by GLOBE AIRCRAFT CORPORATION Fort Worth, Texas

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Luxurious lower-deck lounge of the Stratocruiser

BUY VICTORY BONDS

London—660 minutes by Stratocruiser

Some millions of Americans have recently made new friends in countries all around the globe. Many of those friendships will continue to flourish. For there are no longer any "far-away places." The Boeing Stratocruiser will measure in hours the distance to any spot on earth.

You would expect such an airplane from Boeing—world's leading builder of four-engine aircraft, pioneer in supercharged planes for over-weather stratosphere flight, and creator of the mighty B-29. And the Boeing Stratocruiser will not disappoint you. It is what you want and the airlines need.

The Stratocruiser brings a new, unprecedented standard of performance, operating efficiency and reliability. For it makes full use of the aerodynamic, structural and mechanical advancements developed by Boeing for big bombers and transports during the war. It has a maximum cruising speed of 340 miles per hour and provides exceptionally low operating costs over a wide range of flying distances —from 300 to more than 3000 miles.

Most versatile of all large aircraft, its spacious double-deck design and big payload capacity fit the Stratocruiser for almost every type of medium or long range operation. In the standard, domestic version, 81 passengers may be carried—67 on the upper deck in large, comfortable reclining chairs and 14 in luxurious seats in the lounge—with ample luggage and cargo capacity. As a de luxe transocean plane, the Stratocruiser will accommodate 75 passengers on daylight trips or at night —provide 30 unusually spacious berths plus 15 additional seats—together with baggage and cargo. As a "commuter" transport, it can seat 114 passengers, and in all-cargo operation its 19½-ton capacity and easy-loading provisions make it outstandingly efficient.

For any of these kinds of service, the Boeing Stratocruiser offers the lowest direct operating cost per ton mile achieved by any existing aircraft. To meet the need for all types of feeder and main line operation, other Boeing transports are also on the way.

• • •

The extraordinary performance of the Stratocruiser stems directly from Boeing principles of research, design, engineering and manufacture. You can be sure that any airplane "Built by Boeing" is built to lead.

DESIGNERS OF THE B-29 SUPERFORTRESS • THE FLYING FORTRESS • THE NEW STRATOCRUISER
THE KAYDET TRAINER • THE STRATOLINER • PAN AMERICAN CLIPPERS

BOEING

REVVING UP

(Continued from page 6)

Helpful hints on how to organize, manage, and operate a flying club are available in a booklet prepared by the Engineering Department of Aero Insurance Underwriters, 111 John Street, New York 7, New York.

Wartime secrecy kept the lid on a speed record that would have helped settle all arguments about "absolute maximum" speed for reciprocating-engine, propeller-driven aircraft. In August, 1944, an experimental Thunderbolt clocked speeds in excess of 500 mph.

In announcing this record-breaking flight, Republic Aviation Corporation revealed interesting innovations helped the XP47-J attain such speed. Powered by an R-2800-C Pratt and Whitney engine, the model incorporated a turbo-supercharger so installed that exhaust jet provided approximately 400 hp. of push. Extra engine cooling was attained by installing a propeller-driven fan. In addition, the Curtiss-Wright electric propeller was equipped with a special two-inch hand-welded trailing edge. Full-scale production of the model would have necessitated complete retooling of Republic's plant.

The AAF's B-32 Super Liberators are being ferried to Walnut Ridge, Arkansas, for surplus storage. Fort Worth Army Air Field, B-32 training center, is being converted to other types of aircraft and probably will become a B-29 training center.

New York to Ireland, $246; New York to London, $275—these are the new postwar rates the Civil Aeronautics Boards have been asked to approve by Pan American World Airways. During wartime, the rates were $525 and $572, respectively. New rates will not go into effect until the expiration of a thirty-day statutory period.

The Navy has commended Pennsylvania Central Airlines for its wartime role in the training of Naval air transport pilots. In extending the Navy's tradition "well done," Secretary of the Navy for Air John L. Sullivan disclosed more than 19,000 flying hours and 58,000 take-offs and landings were safely logged at PCA's Roanoke school.

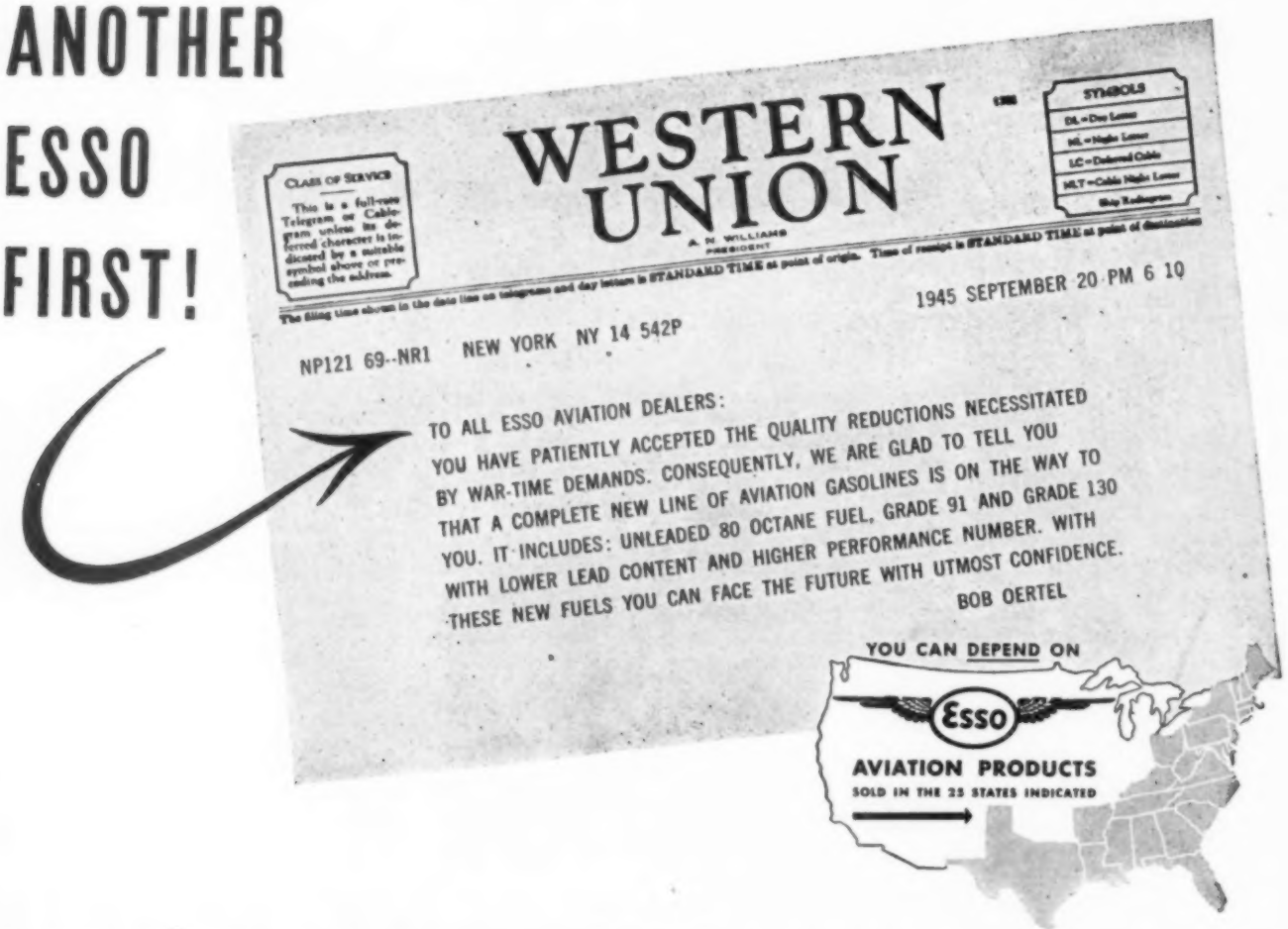
The second nation-wide "Name Your Plane" contest sponsored by General Mills Corp. and Piper Aircraft will award Piper planes as first and second prizes. Thirteen other winners in each state and the District of Columbia will receive some 83,000 miles of free air cruises. The contest is open to boys and girls under 18 years of age.

Propeller vibrations can be controlled by small steel ball inserts, according to Hamilton Standard Propeller Division of United Aircraft. The steel ball is slightly smaller than the socket in which it rests. Vibrations set up in the blade by the engine firing action cause the ball to rock back and forth at speeds corresponding to changes in the engine speed. This rocking motion exerts pressure directly to the sides of the blade to reduce the vibration. As a direct result of this device, certain propeller blades have been made suitable for use with engines of greater horsepower.

The Caterpillar Club plans to publish each member's "jump story." The Club was originally a "mythical" organization but organized formally in 1943. Membership now totals 10,000. Qualified would-be members can write to the Caterpillar Club at P. O. Box 1328, Trenton, New Jersey.

Oddest surplus item turned over to the RFC for disposal is a man-sized box kite used by cargo ships during the war to ward off Nazi and Jap bombers. The all-wood frame kites weigh 20 pounds, are 10 feet long and 13 feet wide, and collapse into a bundle 6½ inches in diameter and 10 feet long. Price is $25 and the RFC will sell no less than five at a time. In addition, purchasers are cautioned not

ANOTHER ESSO FIRST!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YOU HAVE PATIENTLY ACCEPTED THE QUALITY REDUCTIONS NECESSITATED BY WAR-TIME DEMANDS. CONSEQUENTLY, WE ARE GLAD TO TELL YOU THAT A COMPLETE NEW LINE OF AVIATION GASOLINES IS ON THE WAY TO YOU. IT INCLUDES: UNLEADED 80 OCTANE FUEL, GRADE 91 AND GRADE 130 WITH LOWER LEAD CONTENT AND HIGHER PERFORMANCE NUMBER. WITH THESE NEW FUELS YOU CAN FACE THE FUTURE WITH UTMOST CONFIDENCE.
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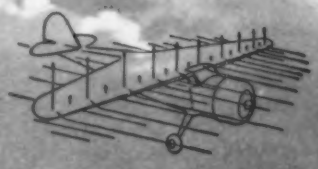
If there's a chance of your owning an airplane . . .

this is important to you

High wing or low wing? Which is the better design for high performance, safety, speed and comfort in your private airplane?

That is one of the major questions that you will have to answer just as we did, and in planning the new line of Cessnas, our answer is definitely *high wing*.

Here are a few of the reasons why . . :



1. The high wing design is more efficient because it provides greater lifting power, particularly when the top of the cabin is an integral part of the center section of the wing. In fact, only such a high wing design permits an uninterrupted flow of air, and consequent *lift*, over the entire span of the wing from tip to tip.

   This means that you can get in and out of small fields more easily.

2. A high wing airplane has greater inherent stability . . . a natural tendency to maintain smooth, level flight . . . because the weight of the fuselage is below the lifting surface.

3. There is better visibility of the ground for both pilot and passengers in a high wing airplane. Flying is easier, more interesting and enjoyable because you get a full view of the country below unobstructed by the wing area.

4. It provides protection from the sun during flight, and from snow and rain while passengers are getting in or out of the plane.

5. High wing design permits placing the fuel tanks up in the wing. This affords dependable flow of fuel to the engine by the natural force of gravity instead of requiring the addition of some sort of mechanical pump.
6. A high wing is much less likely to be damaged by high weeds, occasional boundary lights, fence posts, etc.

Those are the highspots in our reasoning on the high wing vs. low wing question. It's more for your money. Our judgments are based primarily on 35 years of leadership in making fine aircraft. Beyond that, we have flown, tested and analyzed planes representing the full range of design. We have explored every resource we know.

Early in 1946 we are planning to introduce the first of our new line of Cessnas. It will be a high wing, two-place, metal airplane, with the new, patented Cessna safety landing gear. This new Cessna will be superior in performance, yet competitive in price in the low-priced, light plane field.

CESSNA AIRCRAFT COMPANY • WICHITA, KANSAS

Cessna

THE PILOT'S AIRPLANE

to fly the kites near airports or air lanes where they might snag aircraft.

The Joint Private Flying Conference scheduled for Washington, D. C., on November 26 and 27 will mark the first national meeting of private fliers since the end of the war. First of a series of conferences designed to give private fliers a voice in current and future personal flying problems, the meeting will be held at the Hotel Statler in Washington, D. C. William B. Stout, vice president of the National Aeronautic Association in charge of NAA's Private Flying Division, will serve as general chairman. Complimentary "tie-down" facilities have been arranged at Ashburn Flying Service, Hybla Valley Airport, Alexandria, Virginia; Brinkerhoff Flying Service, College Park Airport, Riverdale, Maryland; and at Hyde Field, Clinton, Maryland and Congressional Airport, Rockville Pike, Rockville, Maryland.

A total of 116 aircraft carriers, as contrasted to eighteen battleships and three large cruisers, has been proposed for the postwar Navy, with Naval aircraft strength approximating 12,000 planes of which 8,000 will be maintained in full active-duty status. The figures were given by Chairman Carl Vinson of the House of Naval Affairs Committee after the House last month passed a concurrent resolution establishing the minimum size of the postwar Navy. Congressman Vinson added that about 17,259 Navy pilots will be required.

Look for more trans-polar flights by AAF planes returning from Japan. The first 6,544-mile non-stop flight from Hokkaido, Japan, to Washington, D. C., completed November 1 by four B-29's, was followed by comment by Lt. Gen. Ira Eaker, deputy commander of AAF, that it is planned for "smaller" Army planes to return to the U. S. by the same route, landing for fuel along the way. Flying time for the four B-29's ranged from 27 hours 29 minutes to 28 hours 7 minutes.

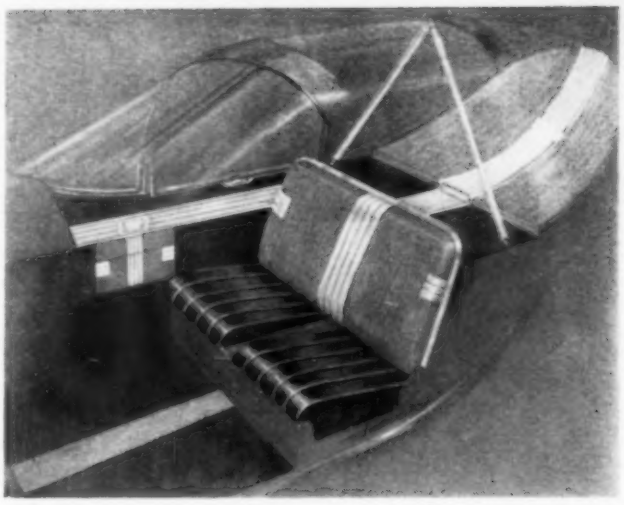
British civil aviation, at one fell swoop, will be taken over by the Labor Government. This development in Britain's socialization program was revealed November 1 in Parliament when officials declared the government would take over British air-transport services, all airports used for scheduled lines and all radio, meteorological and air traffic control services. Explaining the step, Ivor Thomas, Under Secretary for Civil Aviation, told members, "it is the object of the Government to make air travel a normal mode of travel for the masses and not a luxury for the few."

It has now been disclosed that a 2,500-hp., liquid-cooled, in-line, inverted V sixteen-cylinder aircraft engine was delivered to the Army Air Forces by the Chrysler Corporation last January. Incorporating techniques of auto engine design to aid mass production, the engine had a two-piece crankshaft, a one-piece crankcase, and only two valves to a cylinder. Dry weight was 2,340 pounds; over-all length 10 ft. 5 in., diameter 33.5 in.

Shock Waves, Friction Temperatures Experienced with 1,400-mph. "Devices"

Special flying "devices" have already achieved speeds in excess of 1,400 miles an hour, according to Dr. C. C. Furnas, director of research for Curtiss-Wright. Atmospheric compression at these high speeds create problems similar to travel through water and makes necessary a durability of structure and a smoothness of exterior far surpassing previous aircraft requirements.

Another problem in high speed devices, Dr. Furnas said, is the need for air conditioning caused by supersonic speeds. At 600 miles an hour, the airplane's outer skin temperature rises 65 degrees Fahrenheit, while at 1,500 miles an hour, friction causes a temperature increase of 400 degrees Fahrenheit.



SMARTLY-DESIGNED INTERIOR of two-place, all-metal Swift being produced by Globe Aircraft in Fort Worth features de luxe materials and a "stepping" block dividing the seat to facilitate entering the cabin.

Continued drafting of young, qualified aeronautical engineers by Selective Service is "seriously interfering" with the nation's research and development program and hampering reconversion, the aircraft industry has informed a Congressional committee. "No college-trained replacements for these specialists are available," R. E. Gilmore, member of the Board of Governors of Aircraft Industries Association told the committee. The industry statement cited reports that Britain and Russia were embarking on greatly expanded aeronautical research programs and contrasted these trends with recent drastic reductions in appropriations for Army and Navy aeronautical research.

The CAA will open foreign offices in Stockholm, Lisbon, and San Juan, Puerto Rico during the current year. Ten more foreign offices are scheduled for 1946 and will give CAA coverage in Cairo, Karachi, Manila, Hawaii, Paris, Buenos Aires, Natal, Tokyo, Santiago, and Noumea, New Caledonia. Each office will be staffed by three technical men and a clerk, all experienced in domestic CAA routine. The new offices will be necessary to safely handle stepped-up intercontinental airline traffic, the CAA declared, and pointed out that proposed trans-ocean schedules call for as many as thirty flights a day.

The Danish airlines have leased a surplus overseas C-53 for $8,000 annually, the Foreign Liquidation Commission announced recently. In existence only two months, the Commission's cumulative surplus sales abroad total $538,440.

Cancellation by Eastern Airlines of an order for CW-20E transports has been announced by the Curtiss-Wright Corporation. Attractive government lease terms for surplus aircraft and availability of military transports, Curtiss-Wright said, led to a mutual agreement to cancel the airline's order.

A survey of an airways system for Mexico will be the first assignment for Thomas B. Bourne, who recently resigned as Assistant Administrator for Federal Airways. Aeronautical Radio, Inc., for whom the airways job in Mexico will be performed by Bourne, is an organization mutually owned by the airlines.

A Cessna "Flying Laboratory" will cover the eastern half of the United States for the Bendix Aviation Corporation and will demonstrate the company's new "Flightweight" personal plane radio and navigational equipment.

Stanley Hiller, Jr., who invented, built and flew the world's first successful co-axial helicopter, has organized United Helicopters, Inc., of Berkeley, Calif., to develop and produce a small two-passenger helicopter "which can take off or land in a backyard, can proceed at any speed up to 100 miles per hour, and can be housed in a slightly altered two-car garage." ★ ★ ★

THE ROCKET 185

AN AMERICAN FIRST!

first IN THE AIR

The Rocket 185 is, we believe, the first truly postwar plane actually to take to the air. Flights being conducted almost daily have proven the speed, maneuverability, the safety of the Rocket.

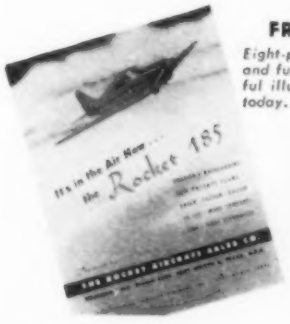
first IN SPEED

Cruising at 185 MPH, the Rocket takes you where you want to go faster, safer, more comfortably. Hydraulically controlled 0° to 60° flaps and special wing tip design give 50 MPH landing speed. Automatic variable pitch propeller gives highest efficiency under all flight conditions.

first IN THE EYES OF *American Airmen*

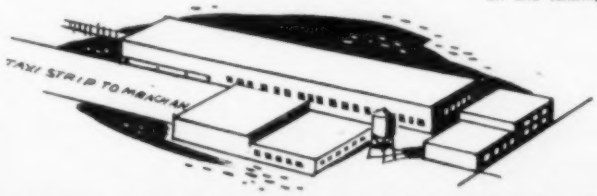
Ease of handling, speed and safety for all weather flying plus complete instrument equipment make the Rocket 185 a first in the eyes of American airmen. Standard equipment includes blind flying instruments, 3-way trim tabs, 2-way radio, homing loop and navigation lights. Carries three passengers with baggage. Delivery approximately 6 months . . . price, fully equipped . . . $5,000.00.

Wide 110" tricycle landing gear with large wheels eliminates ground looping and nosing over. Hydraulic dampeners on nose wheel makes taxiing easy and insure straight take-off and landing runs.



FREE CATALOG FOLDER

Eight-page folder contains specifications and full details on the Rocket 185. Colorful illustrations. Write for your free copy today.



The ROCKET AIRCRAFT SALES CORP.

DRAWER 4306 **Fort Worth 6, Texas, U.S.A.**

Dihedral in wing tips, wide-span flap and retracted landing gear of the new Culver are seen in this flight view. Model "V" is said to outperform prewar Cadet's 120-mph. cruising speed. Other views on page 76.

Culver's Victory Model

With Automatic Control

Pioneering new standards for lightplane performance, the new Culver combines speed, safety and simplified flying.

By GEORGE E. HADDAWAY

THERE might be others in the mill, but we can now state flatly we at last have found a simon-pure *postwar* private-owner type of airplane that has no resemblance to its prewar predecessor. It's the Culver "V" model, which was unveiled last month to Culver distributors at a meeting in Wichita, Kansas. The new airplane proves that Culver executives certainly did not go out on a limb with their wartime advertising slogan to the effect that the new Culver would be "Worth Waiting For". Model "V" is such a far cry from the old prewar "Cadet" in every respect you won't even admit its paternity when you see it, or especially fly it.

If there is any kinship you might call it a great-great-great grandson of the retired "Cadet". In fact, it's the sixth design of a series with all the new attributes, including simplified flight control, improved performance, improved landing gear, visibility and roominess (and all the other factors that go to make an excellent cross-country airplane) developed during the war in conjunction with Culver's remarkable design and production efforts on radio-controlled craft for the Army and Navy.

Practically every airport sitter has seen the sleek little red PQ-8's and PQ-14's that gave Culver most of the experience in the development of the Victory model. In fact, the PQ's are the main reason why Culver has been able to jump into the postwar market with a formidable contender with practically all its improvements and innovations tried, tested and proved out on the toughest testing ground in existence—the military services. That factor is an important one because it removes the model from the experimental category. The same holds true insofar as production is concerned—Culver is tooled-up and has no reconversion problems. Sixty or ninety days should see demonstrators in the air all over the country. Model "V" will sell for approximately $3,750.

If you want a comparison with the prewar "Cadet", here are some items of interest about the "V" model: The

Full control is retained in any nose position or throttle setting in Culver's Model "V"—a pioneering design achievement explained on the opposite page by Designer Al Mooney in an exclusive article. Linkage of stabilizer and flap is shown in this side view. Note visibility from cabin, located well forward.

cabin is "one shoulder wider," eliminating the complaint that you didn't get into the old Culver—you put it on like a coat; the landing gear is tricycle, more than twice as large in size and tread and is retracted electrically instead of manually; the Continental engine puts out 85 horses instead of 75 and eliminates the carburetor (and icing) with a fuel injection system; the airplane carries more weight farther and faster—the old "Cadet" cruised along at 120 mph. and this one looks a good 10 miles an hour faster, with seven hours range; it has simplified control, which probably will be tagged the Mooney "Simpli-Fly" control (developed and perfected by the com-

(Continued on page 76)

Culver's new pace-setter is flying at Wichita and distributors will probably have demonstraters in January or February with deliveries expected to start in April. Price for 85-hp., two-place Model "V" is currently quoted at $3,750.

Something New Has Been Added:

By AL MOONEY
Chief Designer, Culver Aircraft Corporation

Simplified Control in the Model "V"

THE simplified flight control system employed on the new Culver is both simple and logical and can be explained very briefly. In the past, especially in the last decade, aeronautical engineers have been working extensively on flaps. Generally speaking, only two flap positions have been considered—up and down. On the particular flap incorporated in the Model "V," there is an optimum setting for any flight condition the pilot desires. There is the best take-off position for getting off the ground and over an obstacle in the shortest distance. There is an optimum setting for maximum rate of climb, for cruising, for top speed and for landing approach.

Flying by "Gear Shift"

We employ a simple interconnection between the flap and stabilizer so that when the pilot sets the flap for optimum operation of any flight condition the airplane is perfectly trimmed. As a result, the plane will do what a good pilot should do through proper co-ordination of aileron, flap and elevator. Along with this interconnection is a flight control dial on the instrument panel. This dial has two scales—power on and power off. When the pilot is ready to take off he adjusts the dial to "Take-Off" position, steers down the runway and deceives optimum performance on take-off. When in the air, the dial is turned to "Climb", and the airplane will automatically trim to climb.

This operation can be compared to the gear shift of an automobile. First gear would be take-off, second gear would be climb, and third, or high gear, would be the cruise setting. The flight control dial has a wide band for "Cruise" so that the pilot may adjust the controls to the altitude and the amount of power being used. Of course at high altitudes there's less power and it will be necessary to adjust the dial slightly so that no altitude is gained or lost.

When arriving at the destination after deliberately overshooting the field, the dial is turned to "Approach" and the plane is automatically trimmed for the flattest possible glide for the greatest distance at a speed of about 75 mph. with gear up and power off. After passing over all obstacles in approaching the landing area, a spot for landing is picked and the dial adjusted in the glide control range so that the airplane lands at that spot. It is not necessary to "haul back" or "flair" the plane when landing although most competent pilots will in order to produce a slightly smoother landing.

As evident in the accompanying photographs, the elevator is very small in comparison with the stabilizer and on this airplane it ceases to be an elevator. For lack of a better term we refer to it as a tail flap. This tail flap or flipper can change the attitude of the airplane only moderately. It does, however, become a stabilizing factor when fighting rough air or when the pilot flairs for a landing.

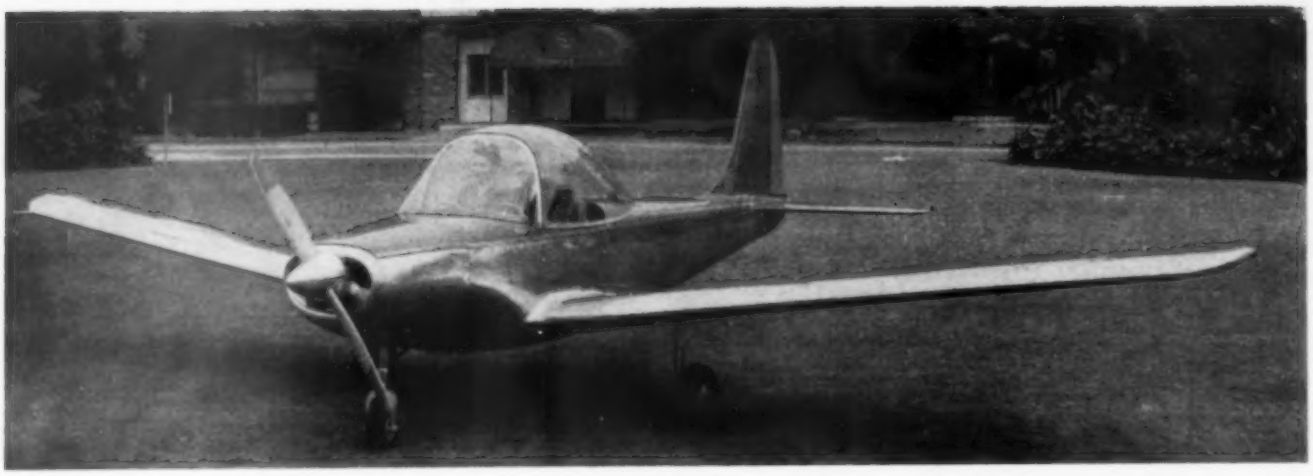
Rudder Not Necessary in Flight

Power is not a determining factor as far as speed is concerned. Power merely determines whether you go up or down. The flight control device determines the speed at any given setting. In case of an engine failure on take-off, the airplane will descend at the speed for which it is trimmed.

Substantially, the Culver "V" is a two-control airplane in the air since it is flown with the wheel only. It isn't necessary to use the rudder in flight. The rudder has been retained only to provide nose wheel steering control on the ground. Even though the "heat" has been taken out of the rudder, and the necessity for co-ordination has been eliminated, the conventional three-control pilot will be at ease while flying this airplane.

In case the pilot desires to drop down through an overcast, the dial setting is turned to "Approach" or in the glide control range and the airplane is left alone. This provides the lowest speed in the glide control range and permits the pilot to "feel his way down" with power. It is possible to fly safely with the dial set in the glide control range with power at 55 mph. In the average low wing airplane, stability usually decreases with decreased speed and power. In working out the flap arrangement incorporated in the new Culver, we have found that it has even more stability at low than at high speeds.

Some pilots might complain because they cannot "stunt" the model "V." But they can do precision flying in it including precision take-offs, slow flying and high precision turns. The airplane can be slipped moderately but it can only be slipped to the extent of rudder control. We have managed to get away from buffeting by use of the unique arrangement of our 70 per cent span flap. On the ordinary airplane the back part of the wing, where it joins the fuselage, is the point of greatest disturbance. With our slotted flap, the venturi effect sucks the air in along the fuselage, as well as around the butt of the wing, which straightens out the airflow and avoids buffeting. ★ ★ ★



Large bubble canopy of plexiglass emphasizes trim lines of All American Aircraft's two-place Ensign. Tricycle landing gear is fixed.

Private Flying Roundup:

New Ensign Flying; VHF Radio Developed

THE All American Ensign, two-place all-metal personal airplane featuring a fixed tricycle landing gear and a bubble cockpit canopy of moulded plexiglass, made its first public appearance recently at Long Beach, Calif., where All American Aircraft, Inc., announced specifications and performance data for the $3,000 craft.

Close-up shows handy baggage compartment behind the seat in Ensign. Note attractive instrument panel and low cowl. Starter-equipped 85-hp. Continental powers the $3,000 all-metal Ensign.

Performance claimed by the manufacturer includes 115-mph. cruising speed, 125-mph. maximum speed, 50-mph. landing speed, 700-ft. per minute rate of climb; 500-mile cruising range; 550-lb. useful load including 50 pounds of baggage, and 13,500-ft. service ceiling. Empty weight is 900 pounds. Dimensions are: Wing span, 33 feet; wing area, 140 square feet; length, 22 feet; maximum width, 44 inches; fin, 60 inches high; horizontal stabilizer, 120 inches; overall height at rest, 8 feet 6 inches.

Although the Ensign is equipped with an 85-hp. Continental engine, the manufacturer says a 125-hp. engine can be installed without change in the airplane structure. The engine comes equipped with starter and generator. A Sensenich fixed-pitch propeller is standard equipment.

The airplane is of all-metal semi-monocoque construction throughout. Frieze type ailerons are aluminum covered. Fixed tricycle landing gear has Goodyear hydraulic brakes operated from the rudder pedals. Standard equipment includes compass, air speed indicator, tachometer, altimeter, fuel pressure, fuel gauge, oil pressure and oil temperature. Dual wheel control is optional.

Gerald Adler, president of All American Aircraft, says his production program for the coming year calls for

the building of as many as 5,000 Ensigns, utilizing "mass production methods geared to automotive standards" gained in the company's experience in war production of specialized aircraft parts for military planes. He said the first Ensigns will be available in January. Sales of the Ensign will be handled by direct factory representatives located in all parts of the United States. Dealers will also handle replacement parts and maintenance "on the level of the family car." Adler is a graduate engineer and an alumnus of the Glenn L. Martin organization.

VHF for Lightplanes

Non-static crystal-clear radio reception and transmission formerly used only by military and airline pilots will soon be available to lightplane pilots. Apparently anticipating government action that will provide very high frequency (VHF) channels for private flying, the Bendix Aviation Corporation announced their new two-way Flightweight radio equipment for lightplanes will be VHF exclusively.

Bendix VHF equipment for lightplanes will include a range and broadcast receiver equipped with direction finding attachment, a companion transmitter, a transceiver combining the two units, and a standard broadcast portable receiver equipped with a built-in loop antenna.

Dallas Factory to Build Fairchilds

Production of Fairchild F-24's in Dallas is expected to start soon, with part of the facilities of the North American Aviation, Inc., factory being utilized by a new Texas firm which will produce 300 F-24's for Fairchild. Powered conveyor lines used for AT-6 trainers and P-51 Mustangs will be used in building an improved version of the popular prewar F-24, a four-place high-wing airplane in the $7,000 category, formerly available with engine installations ranging from 145 to 200 hp. Details of the project have not been released, and new Fairchilds from the Dallas factory are not expected to fly until the spring or early summer of 1946.

Six-Place Stinson "Jeep"

Information has been obtained on a new lightplane for the Army developed in secrecy by Stinson and designated XL-13. First of the AAF's lightplanes to be made entirely of metal, it is the largest of all liaison airplanes and is powered by a 245-hp. Franklin. The XL-13 has provision for two litters and can carry an overload up to six passengers in a special seating arrangement. A small camera hatch facilitates photographic work and removable panels in the cabin allow cargo to be dropped while a floor opening permits pick-up cargo to be hauled aboard with ease. Wing span of the XL-13 is six feet greater than that of the L-5. Its wing is of odd design, having sharply-tapering leading and trailing edges near the tips, with slots and large flaps. Spindle-mounted landing gear wheels permit the XL-13 to be hauled trailer-fashion behind a truck. The rear section of the fuselage is a cone-shaped structure supporting an empennage of odd design, with squared tips on the fin and stabilizer. Performance data has not been released.

Production of Stinson Voyagers, transferred several months ago to Consolidated Vultee's Nashville Division, is being returned to the Stinson Division at Wayne, Michigan. Jim Welsch, Stinson sales director, says the new 150-hp. Voyager will introduce the cabin loudspeaker to the lightplane field soon. He explained that soundproofing in the airplane has reduced engine noise to a level permitting use of a radio loudspeaker instead of the customary and inconvenient earphones. Transfer of the Voyager back to Wayne will not interfere with original production schedules, according to Stinson Division Manager T. Y. Smith, who said the same powered conveyor system used for building over 4,000 L-5's for the Army during the war will be utilized in mass producing the Voyager.

Taylorcraft Reinstates Distributors; 50-a-Day Production Talked

In a presstime long distance telephone interview with Nash Russ, Taylorcraft president, SOUTHERN FLIGHT learned that practically all Taylorcraft distributors were being reinstated rapidly following several protest meetings in which prewar representatives refused to accept the company's unusually large advance deposit and order plan covered in SOUTHERN FLIGHT last month.

One reinstated Southern distributor was asked to place an order for 100 airplanes with an advance deposit of $100 each. When queried on production, Russ stated that his company expects to manufacture "about fifty airplanes a day" beginning around the first of the year. In addition to his duties as president of the corporation, Russ also will serve as sales manager.

Rocket Completes Tour

Johnson Aircraft in Fort Worth reports eleven 185-hp. Rocket fuselages in various stages of construction, with President Pop Johnson hoping to finish thirty-five or forty airplanes before February. Additions to the Johnson factory are nearly completed. L. D. (Pup) Thomas, in charge of sales, and Chief Test Pilot Rich Palmer returned from an extensive demonstration tour in the first tricycle Rocket, having visited all but three of the forty-eight states. The company says it has received orders for Rockets totalling over $4,000,000, the most recent deposit being placed by Robert Taylor, the movie actor, who stopped off in Fort Worth enroute home after being released from the Navy.

First Swift 125 on Line

Globe Aircraft in Fort Worth is accelerating Swift production, with twenty-three Swifts taking shape on and around the assembly line. The first 125-hp. Swift is nearing completion. Three 85-hp. Swifts are flying, and the first production model, undergoing ATC tests, attracted 15,000 spectators to the Kansas City Municipal Airport, according to Joe Howell of Globe.

Low-Priced Instruments

Sizeable reductions in the cost of air navigation and engine control instruments, long expected as one of the numerous improvements needed for volume-produced, low-priced personal airplanes, have been made by one of the leading instrument manufacturers. The new line of instruments is known

(Continued on page 78)

SURPLUS AIRCRAFT DISPOSAL
As of October 15, 1945

Type	Declared Surplus	Sold	Average Price $
Autogiros	9	.....	.....
Gliders	1,178	499	422
Liaison	3,429	3,138	836
Primary Trainers	9,150	4,641	1,059
Basic Trainers	8,679	101	3,673
Advanced Trainers	4,575	63	4,872
Utility Cargo	356	185	5,776
*Transports	3,551	686	16,322
Tactical (Fighters, Bombers, etc.)	12,912	20	16,135
Totals	43,849	9,333	

*118 additional transports leased.

Watch that STALL

A veteran instructor looks over the CAA's twenty-six new stalls.

By RUSS BRINKLEY

"He who flies without a stall
Has never really flown at all."

AS I travel about the country, dropping in at airports, here and yonder, I am besieged for instruction, not by students in search of their private tickets but by a number of old-timers who have, in many cases, more logged hours than I have dependent relatives.

Why are these veterans so eager to welcome fellow instructors from the hinterland? The answer is easy: Stalls. I am never on a field more than a few minutes before someone will step up, introduce himself, and then confidentially whisper, "Say, Bud, are you hep to this new series of stalls the CAA is asking for? How about riding around with me and checking me out on them?"

First of all, I am not a traveling check pilot and I certainly have not had the experience of many of these would-be pupils, but I can't bear to pass up their pleas, so I usually end up by devoting an hour or so to giving my interpretation of the numerous stalls, the performance of any number of which may be demanded by a CAA inspector any time he takes a private, commercial or flight instructor applicant into the air. Inspectors have been very good about checking out instructors on this special sequence, but it would be physically impossible to get around to all of those who want and need the information.

Easy to Learn

Now, for the benefit of those who may not be in position to get a personal checkup on stalls for some time to come, let us allay your apprehensions that these stalls are something brand new about which you have never heard before. There is nothing new about these maneuvers. Neither is there anything difficult. In fact, you may have had them at your command, ready for use on many occasions. If not, perhaps you had occasion to become bewildered about them when you heard them described by some incompetent flier. There is no reason to be frightened or confused. In due time, you will have an opportunity to ride through the stalls, either with a CAA inspector or a seasoned instructor. At that time, may these written words serve as both education and consolation to you.

I have already checked out many students, instructors and service men and none had any difficulty after a brief explanation and demonstration. The complete sequence of stalls can be mastered during an hour of flying time. You will find a number of the stalls, approaches to stalls, and stall recoveries identical with those you mastered early in your flying career. Those which may appear new to you will be accomplished with the same ease as the others.

For the benefit of the instructors, it may be well to state here and now that these stalls should not be taught in an unbroken sequence. Rather, each individual type of stall should be inserted in the flight training program at the point where it will serve its best purpose. The long respected series of three each of power-on and power-off stalls may be taught together, but the

other score of stalls and approaches may best be injected in the flying course where they will tie in with more closely associated maneuvers.

Twenty-six Stalls

In all, there are twenty-six stalls to be considered, beginning with the slow flight at cruising power series. For these you must maintain cruising airspeed and cruising rpm., dependent upon the engine you employ. The nose is held up to new stalling point and straight flight is to be maintained. Be sure to slow the plane to its absolute minimum speed and still have control. Recovery from any tendency to stall is made merely by easing the control column forward until forward speed and control are regained. The second and third of this series are accomplished while in right and left turns. During the very slow speed turns, the airplane is kept at the near-stalling point and here again any necessary recovery is made by simply easing the stick forward.

Watch Icing

The second series of these stalls consists of identical procedure but this time with throttle full back. Without the aid of engine power (be sure to have your carburetor heat on and clear the engine frequently) you maintain a straight heading, following by right and left turns while the nose is held high enough to keep the airplane in a near-stall position.

All of these maneuvers should be practiced at specified aerobatic altitudes with recoveries above 1,500 feet. Participants should be equipped with parachutes and all Civil Air Regulations should be strictly observed during the practice. This includes 90-degree clearing turns to be performed right and left preceding each stall.

Next comes the series of power-on and power-off stalls with which most students and pilots are already familiar. For the first stall, which is in reality only an approach to a stall, clearing turns are made, throttle closed, wings held level and stick eased gradually back in center position. Just as the pilot feels the controls become "sloppy", he eases the stick ahead, regains flying speed, brings the plane back to normal attitude and applies engine power to continue flight. The second power-off stall is begun like the first but the stick is held full back and center until the stall breaks and the nose falls to the horizon.

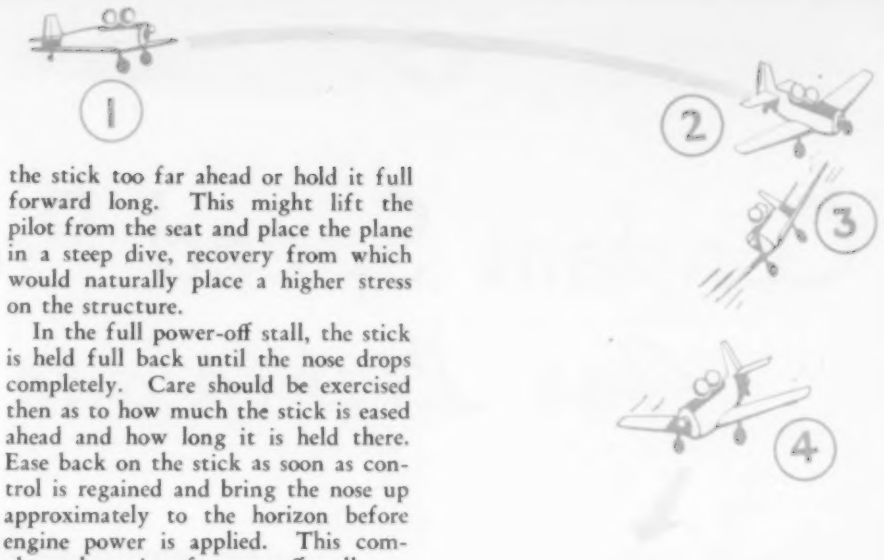
Wings are kept level in all stalls by use of the rudder. If the left wing has a tendency to drop, bring it up with application of right rudder and vice versa. Recovery from this second stall is made in approximately the same manner as number one. Do not push the stick too far ahead or hold it full forward long. This might lift the pilot from the seat and place the plane in a steep dive, recovery from which would naturally place a higher stress on the structure.

In the full power-off stall, the stick is held full back until the nose drops completely. Care should be exercised then as to how much the stick is eased ahead and how long it is held there. Ease back on the stick as soon as control is regained and bring the nose up approximately to the horizon before engine power is applied. This completes the series of power-off stalls.

Power-on Stalls

The three power-on stalls are performed in nearly the same manner. Cruising airspeed and engine power are used and the same clearing turns are employed. For the first stall, ease the stick straight back, keep the wings level with the rudder and when the ailerons and elevators begin to lose their effect and become "sloppy" thrust the stick ahead slightly and at the same time apply full throttle, making sure the plane maintains straight and level forward flight.

For the second stall, let the stall break and the nose fall to the horizon before applying recovery stick and full throttle. In the full power-on stall, do not become confused if the engine labors and the airplane vibrates. Hold the stick full back center until the nose falls below the horizon. Keep the wings level with rudder alone. Never attempt to use ailerons by pushing the control stick to either side. This practice may result in a spin. To bring the nose back to level flying attitude, full throttle, sudden forward pressure on the stick and then the prescribed back pressure is all that is required. A straight heading should be maintained during recovery on all of the above stalls and approaches. This may involve a bit more precision than during recovery from other maneuvers in the sequence.



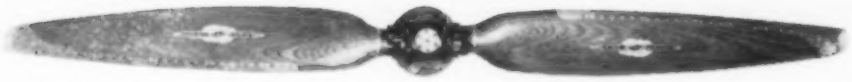
CROSS-CONTROL — (1) Ease into flat glide; (2) begin a left turn, apply more and more left rudder, moving stick steadily right and back toward the right hand corner; (3) the slowed-down airplane, controls crossed, stalls; (4) Recovery: press stick forward and center, neutralize rudders.

Climbs and Glides

Next, right and left climbing turn approach to stalls are listed. Climbing throttle is maintained. In either case, the plane is placed in a climbing turn attitude and the nose pulled higher until the "feel" tells that control is about to be lost. The situation is

(Continued on page 48)

OVER THE TOP—(1) Roll into steep turn; (2) stick full back, pilot kicks top rudder; (3) plane stalls, goes over top; (4) recovery: center rudder, stick forward, throttle back.



Constant Speed Propellers
For Lightplane Efficiency

An expert discusses operating principles and flight characteristics of the fully-automatic variable pitch propeller.

By JESSE JONES

Chief of Test and Service
Aeromatic Aircraft Propellers
Koppers Co., Inc., Bartlett Hayward Div.

THE fully-automatic variable-pitch propeller has intrigued engineers since its inception. However, most pertinent questions have come from fliers justly concerned with "how can it help me?" Involved in the answer are flight operation, principle of operation, weight, service and maintenance, and many other matters.

Unique because no controls from the pilot to the propeller, electricity or hydraulics are involved, flying with the Aeromatic is simple in explanation to the accomplished pilot. The propeller is a self-contained unit, and installation is straightforward. The fixed-pitch propeller is removed; the Aeromatic is installed and locked in place on the engine shaft. For flange type crankshafts, a hub is fabricated with the flange integral. A series of bolts secures the propeller to the engine shaft.

Operating Principles

Many variable forces work on a propeller in flight: thrust, torque, centrifugal force, centrifugal twisting, varying angles of attack, etc. Many are of small consequence, but are accounted for in the operation of the propeller. There are, however, two major forces that produce relatively high operating moments which we can consider in a general explanation of the Aeromatic propeller. These are thrust and centrifugal forces. The Aeromatic is constructed so these forces can hold the rpm. constant at any fixed throttle setting regardless of the air speed or attitude.

The hub is constructed so that instead of locating the center line of the blade on the center line of the hub, the blade lags in the plane of rotation by several degrees. This allows the tip of the blades to move a few degrees fore and aft of the plane of rotation. Thus the blades describe the arc of a cone and effect a pitch change. Adjustable counterweights are placed in a position to form an angle of a few degrees from the center of crankshaft rotation. The counterweights create the greater part of the net pitch increasing force and tend to force the blades to a high pitch angle. Offsetting this, the thrust force on the blades tends to pull them forward into a low pitch. When the engine is revved up against chocks, the counter-weight angle and weight are adjusted so the thrust will put the blades against low pitch stops set to give rated rpm. If a take-off rating is required, the stops are lowered sufficiently to allow for the overspeed of engine on take-off.

Flight Operation

As soon as the plane moves forward, the thrust decreases and allows centrifugal force to move the blades to a higher pitch condition. This movement continues while the ship is accelerating. When the air speed slows, as in a steep climb, thrust again increases and pulls the blades into lower pitch. (Thrust is inversely proportional to air speed.)

After take-off and initial climb, the throttle is reduced to the best cruising rpm. At any fixed throttle setting, rpm. will remain constant regardless of the air speed or attitude.

By reducing the throttle, the propeller will remain on the engine power load curve. This means direct relation of horsepower to rpm. will always exist and cannot be changed. Therefore, at any rpm. the proper manifold pressure will exist. In ordinary operation, a manifold pressure gauge is not necessary for proper operation, although a manifold pressure gauge can be used to check the proper function of the engine.

Since the Aeromatic regulates by the air forces, air density also works in its favor. As altitude is increased, the thrust decreases proportionally, allowing the blade to assume a higher pitch. This keeps rpm. constant with altitude by increasing throttle up to cruise critical altitude. A fixed-pitch propeller would overrev at the same altitude. This feature allows rated cruising horsepower to be drawn from the engine at cruise critical. Thus, a considerably higher cruising speed is attained, plus most efficient fuel consumption.

Due to the constant existence of the two well-balanced major forces, thrust and centrifugal, there is no tendency for the blades to move beyond the pitch required to keep the rpm. constant. Consequently, during a pitch change, the engine does not heat or overrun.

A typical flight with an unsupercharged engine would be something like this. The entire starting, warm up, and taxi procedure is identical to any fixed-pitch propeller. At the end of the take-off runway, if a short take-off is desired, hold the brakes, rev en-

gine until full rated rpm. is attained, and then release brakes for take-off, holding throttle open for the initial climb until all obstructions are cleared. Then throttle back to climb cruise, which is from 100 to 200 rpm. above normal cruise. After the desired altitude is attained, throttle back to cruising rpm., lock throttle, and forget about it. If the cruising altitude is changed, the throttle will require to be reset due to the change in carburetor boost caused by altitude.

At any fixed throttle setting the attitude and air speed of the ship can be maneuvered from a complete stall to a dive at placarded air speed. At all times the engine speed will remain constant within 50 rpm. The same condition will exist at full throttle or any intermediate throttle settings. Also the corresponding rpm. to throttle setting will exist in any acrobatic maneuver as long as the engine horsepower is not changed—such as inverted flight when the average engine will cut out.

Landing

On a cross-country flight, by use of a calculator based on 200 ft./min. descent, a power glide is started at the proper distance from the destination. Keeping the rpm. at cruising, an additional air speed of 5 to 10 mph. is gained, thus regaining some of the time lost in climbing to cruise altitude. As a lower level is reached, the air density is higher; consequently, the boost is higher. Also, additional air speed will increase the ram on the intake. This should be compensated for by pulling the throttle slightly to prevent overspeed. If a manifold pressure gauge is used, this boost becomes very apparent.

When the final landing glide is desired, the throttle is pulled all the way back in the conventional manner. The blades will then assume a rather high pitch—thus the rpm. in the glide will be rather low. In case of overshooting, the throttle is opened wide and immediately the engine, without any lag, will be at full rated power. A pull-up can be made without difficulty. This is also true with touch-and-go landings. This characteristic is valuable for training ships, especially in acrobatics because maneuvering speed can be attained quickly with open throttle and little loss of altitude. The engine will not overrev at any time.

Applications

Propellers have been manufactured and are in use varying from 65 hp. to 600 hp. The weight of the 65 hp. to 150 hp. propeller is about twenty-eight pounds including all attaching parts. The 600 hp. propeller weighs ninety-six pounds including all

The Aeromatic variable-pitch propeller, installed above on a Piper L-14, weighs approximately 28 pounds. Adjustable counterweights, which create the greater part of the net pitch increasing force, are visible on each side of the propeller hub. The counterweights are fully accessible, and can be set by standard wrenches. Performance of Army liaison planes has been improved considerably by Aeromatic propellers.

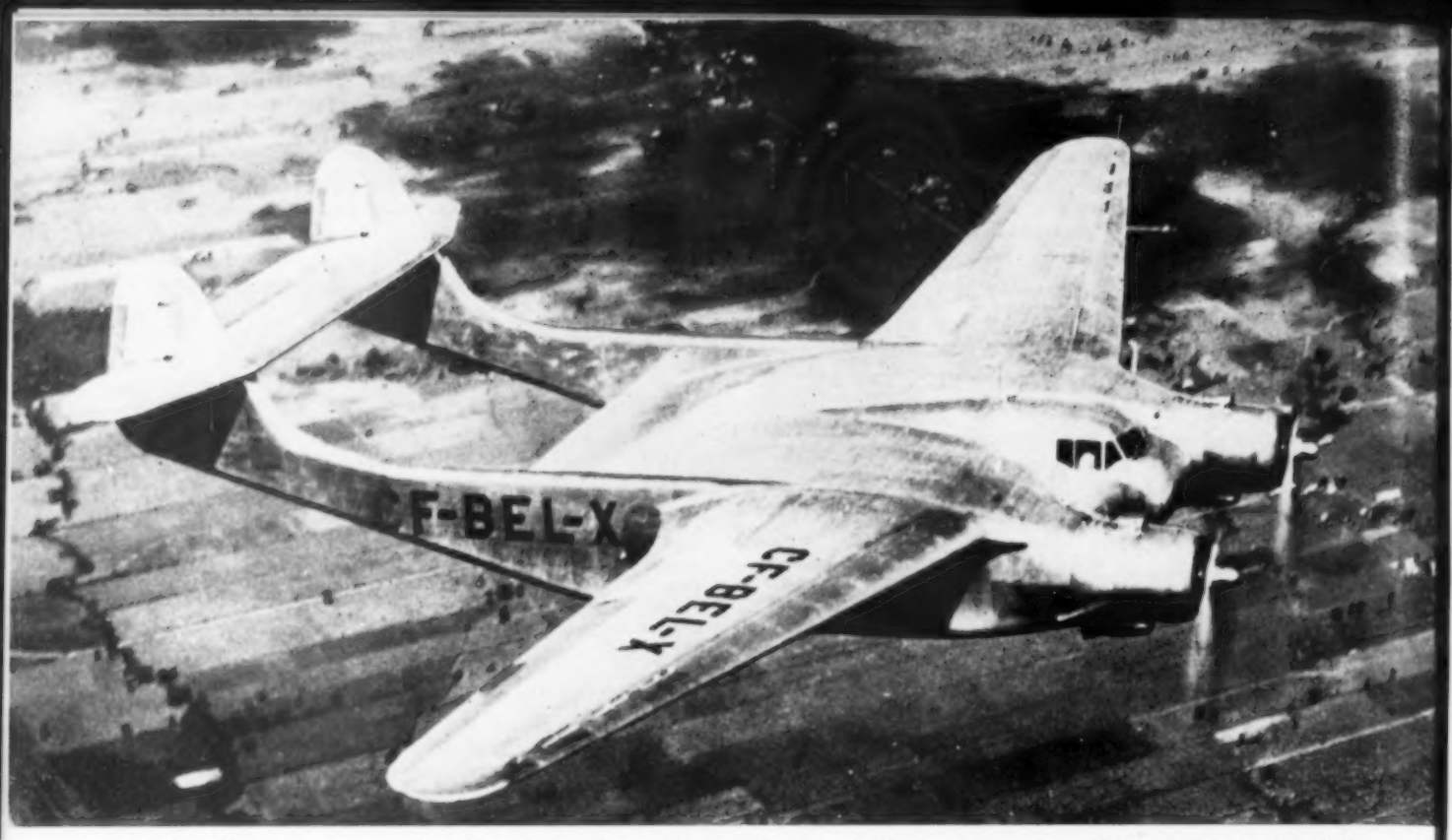
parts. It is apparent that the higher horsepower has a very definite weight saving ratio over comparable variable-pitch propellers. Even in the lower horsepower class the center of gravity was well within the required limits. Due to the increased performance, the propeller can well carry itself.

On bimotor installation the Aeromatic propeller has definite advantage over fixed-pitch propellers, especially in the 200 to 300 hp. class. The pronounced advantages have been extensively demonstrated with the twin-engine Cessna. Both engines can be turned up to full take-off power rating for take-off and initial climb. Cruise power can be maintained with increased speed and altitude. On single-engine operations the air speed is decreased, resulting in a fixed-pitch propeller slowing up rpm. in proportion to air speed, thus causing the engine horsepower to be rather low. On the other hand, the Aeromatic will develop maximum rpm. and maximum horsepower. The dead engine will automatically go into a semi-feathering position and decrease the drag. On some installations this has increased the single-engine ceiling of bimotored ships several thousand feet.

Service

Present test flight logs show over 7,000 hours accumulated in the past five years. The military flight time is not known although propellers dismantled after four or five hundred hours show no appreciable wear except the normal abrasion on the blades, which were entirely serviceable after refinishing. For commercial or personal operation, the propeller should be dismantled and inspected by an authorized service station at each major engine overhaul. For general service, the oil in the hub should be checked for the proper level at each twenty-hour engine inspection. Other than these specifications, routine observation for security of safety wiring, etc., is all that is required. Since external forces are used for actuation, there are only three moving parts. Other parts are used for blade preload, bearing support, retention, adjustment and sealing. The counterweights are adjustable for propeller regulation, are fully accessible, and can be set by standard wrenches. When the counterweights are loosened, the blades can be unscrewed. Balance rings on the ends of the hub are also externally adjusted. Limits of blade angle range are adjusted by the removable or addition of shims to the blade synchronizer, eliminating individual blade stop adjustment. ★ ★ ★

The bimotor fully-automatic installation, pictured here on a Cessna UC-78, will prove very advantageous during emergency single-engine operations. When the throttle is retarded, the dead engine's propeller will automatically go into a semi-feathering position; the good engine will develop maximum rpm. and horsepower. On some twin-engine planes, especially those in the 200 to 300 hp. class, the fully-automatic installation has increased single-engine ceilings several thousand feet.



How the Burnelli fuselage does part of the wings' work is evident in this view of the new 38-passenger CBY-3 transport. All of the broad area between the booms is devoted to passenger and baggage space. Note the unusual cockpit design and protruding 1,250-hp. Pratt & Whitney engines.

TACA Tests May Mean Pay-Off for Burnelli

The pioneer of the fuselage that lifts is flying his eighth transport design, built in Canada for cargo service in Latin America.

By PAUL GROVER

VINCENT J. BURNELLI, the Texan with the inexhaustible storehouse of pure hope, is back on the market once again with his modified flying wing transport plane, and this time he may have better luck.

The Burnelli story has become a part of American Aviation's legends. For a quarter of a century the smooth-shaven little man who made the fuselage of an airplane do part of the wing's work has trotted patiently back and forth between his factory and the offices of potential customers trying to sell his idea. Somehow, no one ever has ordered his airplane in quantity.

Today's Burnelli transport is the eighth of its line. Like its predecessors, it flies well. It performs wonderfully. It was built by the Canadian Car & Foundry Company at Montreal under some sort of an agreement whereby Burnelli was retained as designer and consultant. To outward appearances at least, the C. C. & F. deal appears to be another of those sleight-of-hand arrangements which has characterized Burnelli's operations for the last several years. Burnelli says it isn't his fault. He proves it by long dissertations on his woes since Roosevelt came to power. The long and short of the story is that Burnelli owns certain basic patents for the modified flying wing, and is imbued with hope that never dies.

The new Burnelli has a design empty weight of less than 16,800 pounds, and a loaded weight of 27,400, or almost a ton more than the DC-3. Calibration tests are not complete, but it looks as though the ship will fly at better than 200 miles an hour at 10,000 feet on the same power as a DC-3. The familiar Douglas can't match that.

TACA Testing New Plane

TACA ordered a fleet of the planes from C. C. & F. but delays in producing the prototype left the TACA people frowning down their noses for a period of months. Now TACA pilots are testing out the new plane in the chill Montreal autumn air, and it begins to look as though a substantial order for them will be placed before the year is out.

As a cargo plane the Burnelli CBY, as it is called, would appear to fit the role like a glove. Its fuselage is twenty feet wide, and cargo storage is simpli-

fied by great doors on the sides. The cargo space is compact, as against that of the usual cylindrical-fuselage plane, and the travel of the center of gravity under any flight attitude is small. That makes for stability.

As a passenger plane the CBY will still have to prove itself. The wideness of the fuselage automatically resolves the question of what passengers are going to look out the windows. Those sitting inside the first two rows of seats, counting centerward from the windows, will have a choice of reading or sleeping.

Burnelli has an answer to that criticism. "How many of the passengers in these big jobs being put out by the major companies," he asks, "are going to be able to see out the windows?"

Moreover, he makes a pertinent point. The larger airplanes grow, the more they will become like steamships in configuration — and steamship passengers don't spend all their time on the promenade decks. The fact of the matter is that the Burnelli design, if it has its advantages, should show up best in larger sizes, those designed to carry 100 passengers upward.

Another criticism of the Burnelli design is the effect that roll has on the passenger. In a cylindrical-fuselage airplane, the passenger sits on or near the lateral axis. In the Burnelli a passenger sitting at the window is almost midway between the axis and the wingtip. The motion of the roll is accentuated. On the other hand the very fact that the Burnelli is short-coupled reduces the effect from pitching moment, and yaw in rough air amounts to nothing insofar as passenger reaction is concerned.

Design Advantages

Clyde E. Pangborn, the Pacific flier who has been ferrying planes across the Atlantic in the war effort, as long ago as 1936 came out in no uncertain terms in favor of the Burnelli design as compared with conventional design. Pangborn, naturally enough, has done all of the test flying on this most recent of the Burnelli planes.

In a formal communication to what was then Burnelli Aircraft, Ltd., Keyport, N. J., Pangborn pointed out what he termed the advantages of the Burnelli design over conventionally-designed aircraft.

"The engines are ahead of all structure," he said. "This is very important to safety in the event of accident, as the engines and their strong mounts will absorb a large degree of the impact, thereby protecting the cabin and passengers. The pilots' section, being located rearward and not in line with the engines, offers maximum safety for the crew.

Note unusual width of the 20 ft. x 19 ft. cabin section in this front view of the Burnelli CBY-3. Capable of a cruising speed of 200 miles an hour at 10,000 feet, the CBY-3 has a design empty weight of 16,800 pounds and a loaded weight of 27,400 pounds. In a test with full gross weight, the CBY-3 stalled at 60 mph., used only 850 feet on landing run, and needed 1,350 feet for take-off. Cruising speed with 66 per cent power was 196 mph. at 7,500 feet.

"The propellers operate ahead of all structure and are not attached to the lighter outboard wings. This is an important safety factor in the event of propeller failure, as no parts would strike into the structure or cabin sections, or affect any sustaining surface through the tearing loose of the engine mount."

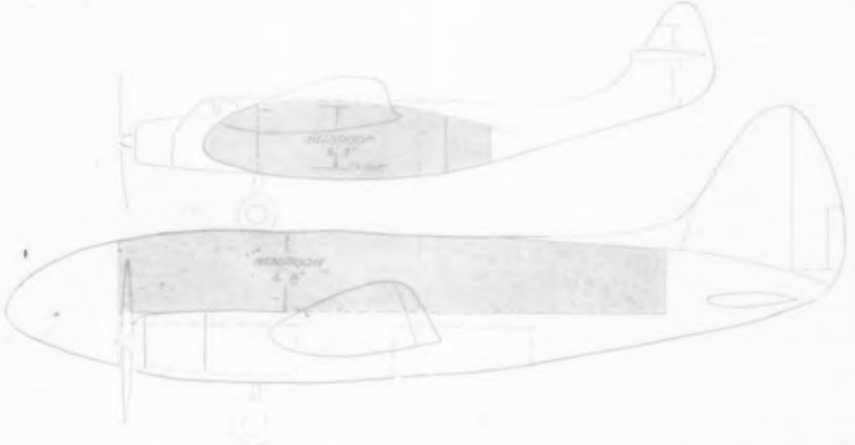
Burnelli, in fact, proved that—inadvertently. When improperly attached ailerons let go of the wing in a flight at Newark airport a few years ago the plane crashed and cart-wheeled. They picked the ship up in a basket—all except the fuselage. It was intact, and two persons who were riding in it escaped with nothing more than bruises.

Pangborn pointed out other things: that the propellers, close to the centerline of the plane, posed no problem of control when an engine cut out; that the broad airfoil form of the fuselage is surrounded by all of the major load-carrying structure; and that the compact body possessed far greater resistance to buckling on impact than a long, tubular body. He said maintenance was simplified, and that for over-water operation the fuselage could be made water-tight more easily than any other form of passenger-and-cargo container.

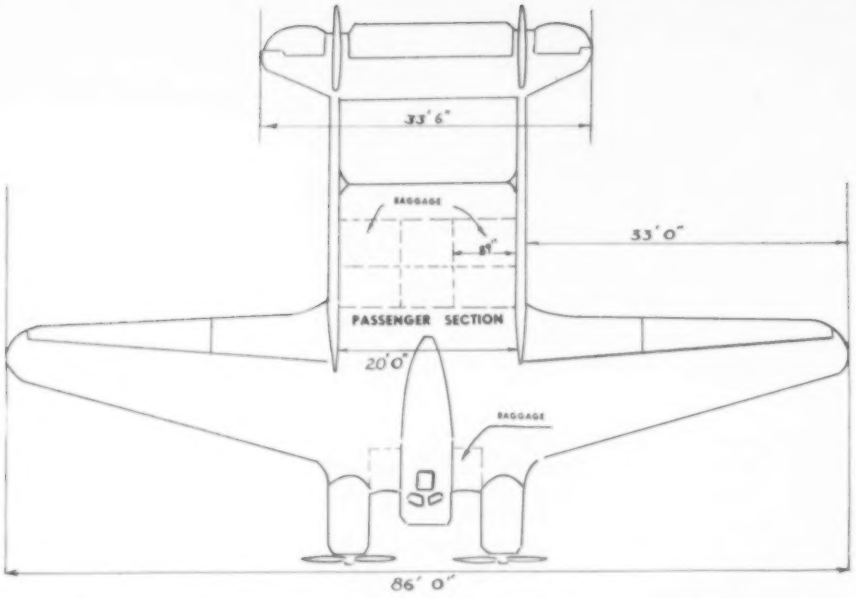
High Efficiency Expected

To the layman, at least, Burnelli has produced a plane that would seem to meet some basic requirements for vastly increased passenger traffic that may or may not be met by other designs. Burnelli deplores the extremely high landing speeds being built into the new conventional transports. "Impact," he says, "goes up as the square of the speed in case of a crash. Therefore, it is imperative that designers attempt to keep down the stalling speed." The new Burnelli plane stalls in at less than seventy mph., despite its good cruising speed. It has an excellent distribution of span load and an exceptionally high safety factor due to the shortness of the wings proper. Pangborn himself has stated that some of the planes flown across the Atlantic on cargo and delivery trips in the course of the war often had a safety factor of slightly more than 1. Engineers suspect that low safety factor accounted for some of those planes that were never heard from after take-off.

Burnelli claims that his design, incorporated into a 100-passenger plane,



How Burnelli's airfoil fuselage provides maximum space for passengers and cargo is graphically illustrated in this comparison of the CBY-3 and the well-known Curtiss Commando. The Commando is 76 feet, 4 inches long as compared to the CBY-3's 54 feet, 4 inches, but while the Commando has an over-all height of 21 feet, 8 inches, the CBY-3 stands only 14 feet.



Unusual location of the engines and large amount of passenger and baggage space available are shown in this top view of the CBY-3. Wing span is 86 feet with a total wing area, including lifting area of fuselage body, of 1,240 square feet. The cabin is 20 feet wide, 6 feet, 3 inches high, and 19 feet long, and has a total volume of 2,600 cu. ft.

would be from 30 to 35 per cent more efficient in terms of drag and that the structure would be 20 per cent lighter. He says that on 40 per cent less horsepower his plane would carry the same load at the same speed—350 miles an hour — as a conventionally-designed transport.

To clinch his argument he points out that 86 per cent of his CBY surface is devoted to lift as against only 50 per cent in a plane with a non-lifting fuselage.

As for a pure flying wing, he explains that the ratio of thickness to wing chord necessarily would be in the order of 16 to 20 per cent, so that with a six-foot-thick wing a chord of upwards of ninety feet would result. That would lead to prohibitive wing areas, and that in turn to too much drag. His modified flying wing, he thinks, is the answer.

It is when you get into a study of the designer himself that you begin wondering about the transport industry's failure to adopt his idea sooner. He has had his troubles. In one instance, while he was in England on a business trip, someone went into his factory at Keyport and carted away twenty-nine carloads of machine tools. It was legal. Burnelli consciously or unconsciously had worked himself into a situation that permitted the seizure.

He obtained from General Arnold a statement that work must go on apace on his design for a fighter plane, and then the whole project became bogged down between the Office of the Secretary of War and the brass hats of the War Department. Just why is one of those mysteries difficult to understand, even after listening to Burnelli's exposition.

He took his design to England where a British firm produced a prototype and then went no further. When you ask Burnelli why, the explanation becomes so involved in legal and technical detail that the answer is lost.

Burnelli's life for a quarter of a century has been wound about with dark and devious figures that move in and out of your periphery of consciousness (in the telling) like men in a murder mystery. Much of this story has to do with the "White House." Involved in it are men who were around the late President Roosevelt. In the Burnelli version, Secretary Stimson appears to be one of the chief "villains" in the drama. And there were other, and lesser, "villains" too numerous to mention.

But now the eighth Burnelli ship is here. Clyde Pangborn takes it off fully loaded with a remarkably short run, and puts it down practically at a walk against a zephyr. The ship must have something. After the British-built Burnelli plane had been on a junk heap for months, someone rescued it, rebuilt it and put it to work in Latin America. The latest Burnelli design looks like an answer to TACA's prayer, a plane that is stable and short of run on those restricted landing fields of Central America.

Maybe, for Vincent Burnelli, this is the pay-off. ★ ★ ★

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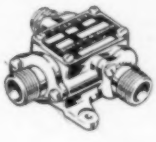

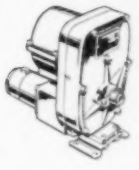

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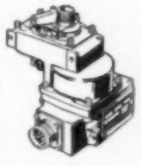
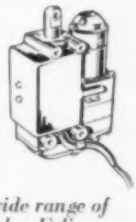


Eclipse Type 1600 Actuators are available in pairs (left and right hand) for application where simultaneous movement of two elements is desired.



Eclipse Type 1602 Actuators are small screw-jack types with integral motors, gearboxes and limit switches.

These are only a few of the wide range of types and models produced by Eclipse.

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ECONOMIC REGULATION—

Certain Death FOR NON-SCHEDULED AVIATION

By A. H. KNOUFF

ONCE upon a time there was a man who became a proud father. As he beamed at the little fellow through the plate glass of the hospital nursery he said to himself, "Just think, he might someday be President — or a second Einstein — or even greater, maybe." On the counter of the store where he went to buy the cigars lay a newspaper. The new papa glanced at the headlines and began to worry.

After all very few people could be President and there has been only one Einstein. Maybe the poor little fellow would develop an inferiority complex. This might lead to almost anything from mere unhappiness to attempts to bolster his ego in an abnormal manner. As the father strode toward his office with the new cigars under his arm, his pace slowed. Suppose his baby became a criminal maniac. Think of Hitler and Mussolini. What if his child should grow up to be such a monster and bring such calamities on civilization?

He turned his steps from the office and back to the hospital. Again he stared at the little fiend through the glass, but this time he was not fooled by that deceptive innocence. So he dashed in before the nurses could stop him and smashed the little demon's head against the wall — thus saving humanity from untold horrors.

To "protect" the airlines, the Civil Aeronautics Board would hamstring small operators with unreasonable requirements.

With similar unbalanced logic the CAB proposes to attack the menace of the non-scheduled air carrier. This was exposed effectively in a single paragraph of the editorial "Premature Regulations" in the September issue of SOUTHERN FLIGHT:

> The examiners admit that charter operations are relatively small and probably won't constitute any economic threat to the scheduled airlines any time in the near future. They also admit that there is no data available with which to estimate the extent of non-scheduled traffic. Herein lies the basic weakness of the report. The examiners seek economic regulations of the non-scheduled operators, not because charter services are now or will be any time soon a source of unfair competition to certificated carriers, not because charter business has reached such proportions that stricter regulations are necessary, but rather because they *think* the non-certificated carriers *might* develop into a healthy commercial enterprise sometime in the future.

This should be remembered not only for emphasis, but as a sort of "In Memoriam" to the fixed-base operator. Such mourning in advance of the death of the intended victim is quite in keeping with the theory of pronouncing the death sentence before there is any proof that the defendant is, or ever will be, guilty of anything.

Was it coincidence that this editorial was followed in the same issue by two others — one concerning General Arnold's warning about the importance of air power in future conflict, and the other pointing out some of the problems facing civil aviation? Two of the planks in the platform proposed by the latter are: "Continued revision of the Civil Air Regulations and an accelerated attack on official red tape; a consumer movement to force an improvement in the code of ethics of airport operations and a general clean-up of aviation merchants' physical property in order to win and hold new customers."

If the proposed economic regulation of non-scheduled air carriers were solely for the purpose of aiding the operators in keeping their own house clean, we should welcome a CAR Part 42. It appears, however, that the purpose of the CAB in proposing regulation of the fixed-base operators is to "protect" the airlines from the "bogey man."

Anyone who expects to go into the aviation business, or to buy an airplane, or learn to fly and who does not get a copy of the proposed Part 42, read it and write a letter of protest, is cutting his own throat. The airlines should protest louder and stronger than anyone else, for the fundamental premise under which the CAB proposes such regulation is as false as the old-fashioned gold brick.

No Competition with Airlines

The non-scheduled operator does not compete with the airlines, any more than taxicabs compete with busses. No one would hire a cab for a trip between two cities served by trains or busses unless there is so much at stake that he cannot afford to wait for scheduled transportation. Railroads, buslines, or airlines cannot afford to run enough schedules to accommodate such emergency passengers. The airlines cannot afford to keep a fleet of aircraft scattered around the country for such business any more than the non-scheduled operator can afford to maintain his own radio facilities in all the areas to which he might be called upon to make a charter flight — a proposal

which the CAB appears to be seriously considering.

It is true that many of our airlines developed from non-scheduled operations. It is true that many non-scheduled operators are now applying for "feeder line" certificates, some of which might develop into full-fledged airlines. It is also true that in some cases existing airlines are assisting these newcomers to get their certificates, indicating that the airlines themselves feel that the present regulations afford them sufficient protection.

Non-scheduled aviation's reason for existence is flexibility. It provides equipment from Cubs to Electras to meet the needs and pocketbooks of every community. If that flexibility is curtailed, many communities can never support any kind of flying activity. Few private fliers can afford to continue flying unless the cost of airport and hangars is divided among several others. Not only does the fixed-base operator supply this service, but he further divides the overhead among his other activities and services. Take any one of these sources of income away from him and he must charge more for those that remain, or go out of business. If he can raise the money, it is natural that he will try to get into the airline field if he wants to stay in aviation.

Unreasonable Requirements

About now, you may be saying: "This guy is doing a lot of talking, but he hasn't said just what is so bad about these proposed regulations." So it is time to do just that. I am going to point out a couple of things, but you had better get a copy of CAR Draft Release No. 58 and look up the rest yourself:

> 4.10(b) Multi-engine aircraft shall be:
>
> (1) equipped so that engine rotation may be promptly stopped in flight.

This means that the twin-motored Cessnas which many operators have bought could not even engage in commercial sightseeing hops until full-feathering propellers are designed and manufactured for them. The cost of these props may be more than he paid for the airplane. Plans for twin-engine lightplanes would be shelved because if they are equipped to comply with this regulation the price will be so high that private fliers cannot afford them, and if they are not so equipped the operator cannot afford to buy a demonstrator because he can't use it for anything else.

> 42.10(c) Single engine land aircraft, except for take-off and landing, shall not be operated over water beyond safe power-off gliding distance from shore.

Airmen's Calendar

November 15-16—Arizona State Aviation Conference, Tucson.

November 17—National Aeronautic Association, Board of Directors, Quarterly Meeting, Oklahoma City.

November 19-21—National Aviation Clinic, Oklahoma City.

November 26-27—National Aeronautic Association, Joint Private Fliers' Conference, Statler Hotel, Washington, D. C.

December 3-5—Society of Automotive Engineers National Air Transport Engineering Meeting, Edgewater Beach Hotel, Chicago.

December 10-11—Aviation Distributors and Manufacturers Association, Statler Hotel, Cleveland.

December 11-12—Western Aviation Conference, Sacramento, California.

December 16-17—International Aviation Day, El Paso.

December 17—Institute of Aeronautical Sciences, Washington, D. C., Meeting, Wright Brothers Lecture.

January 4-6—Miami Air Races.

This may not concern the majority of operators, but the many who are located around the Great Lakes or the sea coasts derive much of their business from the fact that they can take a direct route across such bodies of water while other means of transportation have to go around them. Thousands of such flights have been made with an insignificant record of accidents. Much aircraft operation over land covers areas where a forced landing would be more dangerous than on water. So if such a regulation is adopted, CAB may as well rule that single-engine aircraft shall not be operated beyond gliding distance from an airport.

42.13 would even prohibit you from making local passenger hops in a lightplane unless you have it equipped with two-way radio, and a source of electrical supply sufficient to operate it. Such equipment as is available today will use up the baggage allowance and cut the passenger down to a midget on most lightplanes. If the flight is to be at night, you must have more equipment than was once required for an instrument flight.

42.10(f) would prohibit night flying in single-engine aircraft entirely. It is questionable whether accident statistics justify such a rule. With the requirement of full-feathering propellers, this would mean that you could not make a charter flight at night in anything less than a Beechcraft.

Some of the proposals, not incorporated in the draft of Part 42 apparently under consideration, would have the effect of requiring an operator to obtain a separate air carrier certificate for each type of aircraft he used. One proposal would require a fixed-base operator to own and operate his ground radio at each airport he used. For some obscure reason the CAB seems to think it may be dangerous to fly an airplane of less than 100 hp., more than 500 miles from home.

Expansion Needed — Not Restriction

In a few years, most of the proposed regulations may not seem unreasonable. Right now the fixed-base operator is facing a period of struggle. Operators must do business with the same type of equipment they had before the war. In a few years, design and production problems on the equipment required by the proposed regulations may be resolved so that the operators may adopt it profitably. Meanwhile the need to regulate non-scheduled operations has not been proved. General Arnold says we must have an expandable nucleus of aviation industry as protection against future wars. Is the CAB going to kill that "expandable nucleus" at birth because it fears, without foundation, that it might compete with the airlines?

Although the airlines played an important part, they could not provide the personnel to train the large number of pilots who were needed suddenly. The thousand airline pilots were too badly needed for the job of transporting important persons and cargo, while the non-scheduled commercial and private pilots took on the job of training more pilots and delivering airplanes.

If there had been no non-scheduled operators there would be no airlines. Many of the airlines' present customers were sold on flying by a sightseeing hop at the local airport. The fixed-base operators are selling aviation in localities where the airlines cannot afford effective promotion. I think that most airlines realize this. I found it easy to obtain co-operation from them when I was in the charter business.

Furthermore, fixed-base operations will offer jobs for the pilots whom the airlines cannot absorb. In addition, many military pilots are going to have to be retrained in some phases of flying that have been neglected in the concentration on military flying, before the airlines will consider them safe for scheduled carrier operations.

We should hesitate before we risk restrictive regulation on a phase of the industry which is such an important part of our aviation economy and national defense. ★ ★ ★

WATCH THAT STALL

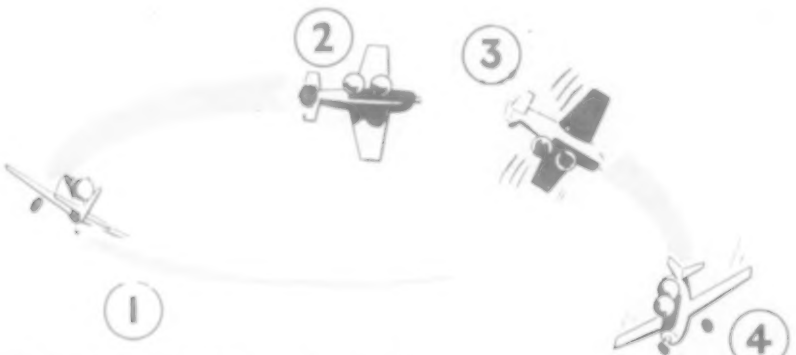
(Continued from page 39)

alleviated by easing the stick ahead and lowering the nose. This covers the approaches to climbing turn stalls.

The two full climbing turn stalls are practiced also with the throttle in climb position. Stalls to either right or left are completed by placing the airplane in climbing turn, and then raising the nose until a full stall develops. Here again, recovery is made by mere forward application of the stick which is then eased back until the plane is on even level.

Right and left approach to stalls from gliding turn attitudes are effected by applying carburetor heat, throttling full back and placing the airplane in gliding turn position. Gradual back pressure is then applied to the stick until the feel of the controls indicates that the airplane is about to stall. A simple recovery is made by merely releasing this back pressure. Full stalls during gliding turns, right or left, are effected by heaving back suddenly on the control stick while the airplane is banked and in power-off turn attitude. A full stall is required in each instance and, as soon as the nose falls through the horizon, forward stick should be applied to get the nose down in order to pick up flying speed and effect recovery. Precision is not required but can easily be demonstrated during these recoveries.

If the final six stalls of the sequence appear more complex it is also true that they are most practical. Many grave accidents have occurred as the result of these stalls and any of them may be encountered in everyday flying. Certainly, the final pair may be witnessed almost any day at any busy training center.



OUT OF THE BOTTOM—(1) Roll into steep turn; (2) stick full back, apply full bottom rudder; (3) plane stalls, out bottom of turn; (4) Recovery: Close throttle, center rudders, stick center and forward.

Tight Turns

Our next two stalls, right and left, are the same as over the top spins out of tight turns, except that recovery is made before the airplane actually starts to spin. While at a safe altitude, the airplane is placed in steep turn attitude for a 720-degree turn. During the first turn the stick is pulled back so that about the time the plane has completed a 300-degree turn, the stick is full back. At that point, the pilot kicks full top rudder. The airplane will have a tendency to go over toward the high side and enter a spin in the same direction. As the plane goes over the top, recovery may be made by centering the rudder, holding the stick centered and sufficiently forward. The throttle is pulled back until recovery is effected. Instead of spinning, the airplane will go into a dive, from which recovery may be made in the normal manner, using back pressure on the stick.

Right and left stalls out of the bottom of a tight or steep turn may be started in the same way. Just as the airplane is about to complete 360-degree of the steep turn, while the stick is full back, full bottom rudder is applied and full throttle left open for just a moment. Throttle is then closed, the rudder is centered and stick is center and slightly forward. As soon as control is regained, the airplane is brought back to level flight and cruising power applied.

Bear in mind that most of these stalls require practice toward both right and left. An applicant can never ascertain in advance which of the many stalls the inspector may wish demonstrated. He probably won't call for all of them but one must be prepared to perform those called for.

Cross-Control Stalls

Lastly and of extreme importance are the right and left cross-control stalls. The same heaven that protects the working girl must observe and tolerate these stall conditions hundreds of times during the course of a day. Those flat turns, made by pilots during final approach to the airport, are too frequently caused by crossing the airplane controls—that is, using left rudder and right stick or vice versa at the same time, while the airplane remains practically level and usually at reduced speed. This is one of the most hazardous of all flight attitudes and conditions, chiefly because it occurs at a time when the airplane is too close to the ground for a recovery from a stall and succeeding spin.

Nearly every amateur and seasoned pilot has done this at least once during their flying career. They will be making their final turn into the airport for a landing. For some reason, instead of leaning with the turn and using left stick and rudder in a co-ordinated fashion, they'll unconsciously want to ride against the turn, remain sitting upright, while feeding left rudder and applying right side pressure to the stick to hold the airplane level. Pilots have all been trained differently, but still many of them continue this hazardous practice from time to time, apparently while in a momentary stupor. They wouldn't permit it if they were instructing a student or if they were in full command of their senses.

Ideal practice for cross-control stalls may be effected above 1,500 feet, with carburetor heat applied and throttle full back. The airplane may be eased into a rather flat glide and a turn begun, just as though you were making a final turn from the traffic pattern into the airport for a landing. Since left hand turns are most popular at airports, let us assume that a final approach turn is being made. More and more left rudder is applied until full left rudder is held. At the same time the stick is moved steadily to the right and back toward the right hand corner. The critical moment arrives when the slowed-down airplane, with controls completely crossed, decides to nose down erratically and enter a spin more violent than when the stick is full back and center and full rudder is applied.

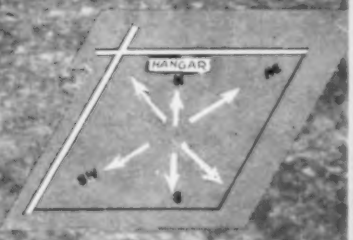
In this case, as the nose drops, center the rudder and have the stick pressed forward and centered. Recovery will be effected as soon as the airplane has fallen far enough to regain flying speed. Never pull the stick too quickly after recovery from a stall and

(Continued on page 80)

MODERN AIRPORTS

Volume III November, 1945 Number 3

Sanders Field near Memphis is on a 162½-acre tract. Its well-drained turf landing area is 3,900 by 5,400 feet in dimensions. Main building, 100 by 200 feet, is adjacent to Highway 61. J. F. Lanier is manager.



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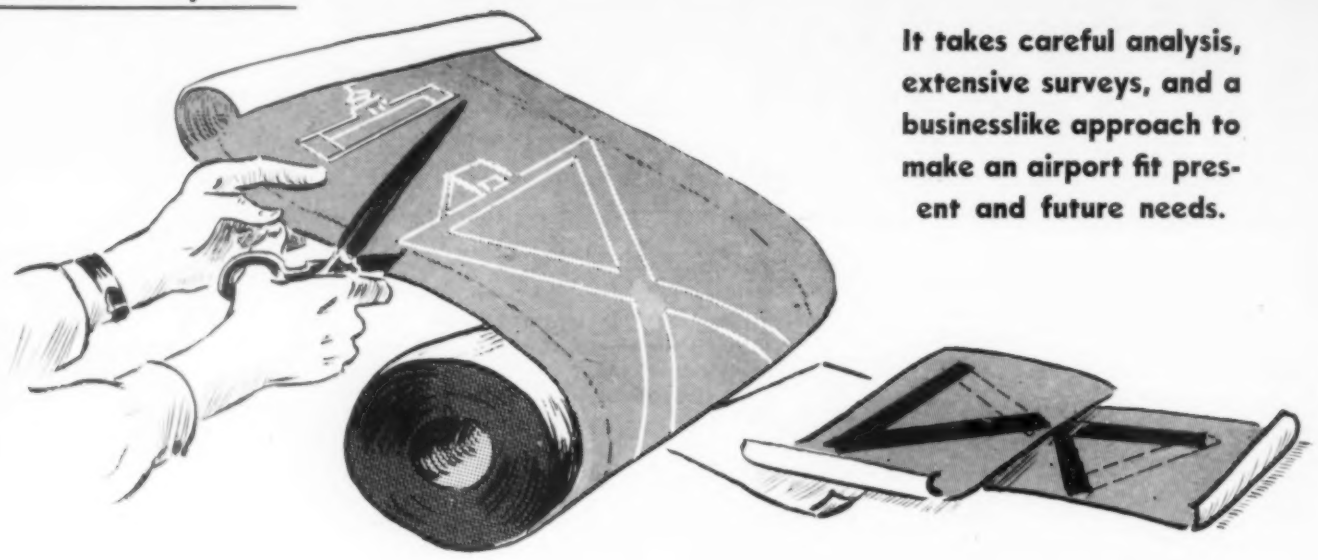

It takes careful analysis, extensive surveys, and a businesslike approach to make an airport fit present and future needs.

Tailoring Airport Plans to Community Needs

By LEIGH C. FISHER

BUILDING an airport's revenue and patronage is not exclusively a problem of salesmanship. The airport itself must include a certain amount of desirability and usefulness to insure a profitable operation.

Whether the community has an existing airport or plans on acquiring one makes little difference. In either case the airport's function and operation must be adapted or "tailored" to the individual need of the community.

To make an accurate appraisal as to what type of airport is needed to meet the requirements of the city, a study must be made. This study should comprise a general survey of the community and its surrounding trade area. The method of making this study is to gather and analyze all necessary data and interpret it into plans for the work to be done on the airport.

Some economic data is necessary so that an estimate of airport use and revenues can be made. This data should include representative business enterprises in the community. To interpret this information into airport use requires that the activities and personnel of each of these businesses be classified. In some cases it will be found that the business intends or desires to own one or more aircraft, either for their executives' or salesmen's use. From all information collected, some idea of the scope of airport size to accommodate these aircraft can be made.

Other sources of airport use are universities and colleges, and if any are in the area, their needs should also be determined. In some cases educational institutions will want a hangar on the airport for experimental and research work or to teach maintenance and service procedure to their students. This source of airport use should be developed to its maximum. Along with sponsored educational activity at the airport, revenue from aircraft rental, charter and instruction will be derived from local students; this use should also be considered.

Community Factors Listed

Another necessary feature of this survey is to determine the number of families with a yearly income in excess of $5,000, in order to derive the private aircraft ownership potential. This figure of $5,000 is an arbitrary one, but at present is considered the minimum income required, on the average, to own and operate a private aircraft. When the number of families with a yearly income in excess of $5,000 has been established, one can obtain an estimate of potential plane owners by taking 5 per cent to 15 per cent of this figure which gives an approximation of the number of private aircraft which the airport may have to accommodate in its final development. These figures, 5 per cent to 15 per cent, are arbitrary and are used merely to represent the method. The percentage will vary with each locality and area and this would be determined by the survey.

When these features have been considered, the study should evaluate the travel habits of the community and the different features which affect airport use in any community. If the community is a state capital or of political, historic, scenic, recreational or business importance, an additional volume of airport use can be expected and plans should make provision for this. The study of local travel habits will temper all preceding information, and final plans for the airport should reflect its results.

All these features are of importance to a community planning an airport. If any are omitted, and accurate appraisal and analysis of the data are not made, the airport may be inadequate, or may be over-built to the point where it becomes a financial liability to the community.

In planning a community airport, its location with respect to other communities must be considered. In some cases construction and operation of an airport exclusively for the use of one community is not practical when other communities are closely adjacent. Where two or three towns are within a reasonable distance of each other, it is often much more practical for these towns to build one airport to

serve all. This will bring about a great saving in construction and operation costs as well as increased usage of the airport because of the greater area from which to draw trade.

Transient Trade

Another feature which must be considered in the community's relationship with other communities is whether an airway or logical air route passes nearby or over the community. If such is the case a certain amount of transient trade can be expected to use the airport. The amount of this transient trade will be determined by the community's relationship with the other communities which originate and terminate such transient operations.

It should be recognized that there are two separate elements which will be needed to complete the master plan. The first is an accurate estimate of the airport use which can be expected at the present time. The second is a projection of the possible future use which can be expected. Of these the first is most important and should be extremely accurate since the airport development of the community may hinge upon the satisfactory operation of the airport in its first stage.

If the airport as planned and constructed in its first stage is so extensive that it becomes a financial liability to the community, public opposition and resentment may retard or completely stop the future expansion or development of the airport and thereby restrict the community's growth.

All this planning emphasizes the fact that an airport is a facility that must be "tailored" to a community. Social and economic conditions of the community, present and future, must be considered and represented in the airport's master plan. This plan should include not only the existing airport, but other features necessary for expansion of the field and of the buildings and building areas. The runways should be continued and extended on the master plan so that in the future the expansion and development can be made in an orderly and systematic manner.

The building area on the field must also be planned for such expansion. This means that certain areas must be set aside and reserved for expansion — hangars, fixed-base operations, parking lots, offices, and administration buildings, recreational areas and other facilities which require areas adjacent to the field.

In considering the building area, it should be remembered that it is the buildings and their orientation, design, and grouping and not the landing area alone which determine whether the airport is a practical success or failure. Even in the case of larger airports, the landing area, as distinguished from the building area, is considered a liability, in that the revenue derived from it never equals its overhead. This is not true of buildings and the building area. The revenue obtained from the building area will not only meet the cost of overhead and amortization, but with proper design and management, will provide a surplus whereby the deficit from the field operation can be more adequately met, enabling a more profitable operation for the complete airport. For this reason extreme care and forethought must be used in the planning and design of the areas provided for such building.

The varied problems encountered in planning, designing, building, operating, and maintaining a small airport are discussed and answered in this booklet prepared by the CAA. Copies may be ordered for ten cents each from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

In order that the planning for the present need of the airport may be as near the actual present need as possible, every facility not connected with the landing area should have an expected usage or occupancy of at least 80 per cent.

Design for Revenue

After the results of the survey have shown the present and future need and the master plan has been made, an estimate of the cost of construction should be made together with a revenue estimate of the airport's operation, to determine whether the initial expenditure for the airport and its facilities is in keeping with the revenue expected. In many cases the master plan of the airport will be too comprehensive for the financial limits of the community. If such is the case, the first stage and master plan should be tempered and reduced to a point where the operation, while satisfactory, will not be as extensive as originally intended. In this way, only buildings which produce revenue and which are necessary for the airport's operation will be constructed, and only such other facilities as necessary lighting and marking will be included, thereby reducing the initial cost of the airport. This means that each individual airport while "tailored" to community need, must also be "tailored" to the financial limits of the community.

Throughout the planning of the airport, both in its first and master plan stages, the design should permit the maximum revenue and revenue-producing facilities with the minimum investment. This means that the airport will actually be designed for revenue. When a private individual or company decides to expand its service or to manufacture a new product, it first makes an estimate of the project, the possible cost incurred and revenue to be derived from this extended operation. Upon the basis of this projection, they design the buildings and organize the services which they intend to offer. In this way they design their operation for revenue.

The airport does not differ in this respect from any other business, and each phase of its service and operation should be designed for revenue as carefully as if it were being operated by private capital. This means that the space allotted to the lounging area in the buildings, the parking areas on the grounds, the general area for sight-seeing and recreation should be organized in such a manner as to display the revenue-producing facilities at the airport. The airport restaurant, if such is required, should be not only visible but accessible to the public from the airfield, the lobby area, the parking area, the recreational areas and all areas where there is public activity. By doing this it will draw more trade by making apparent the services offered and by actually inviting the public to partake of its services. Likewise, the fixed-base operators, aircraft sales and services, and air taxi service should be located so that they are visible and easily accessible from the areas assigned to the public.

The grouping of such revenue-producing service concessions and operations around the public area is a form of advertising which not only adds a greater revenue potentiality to the airport's operation, but also makes a more desirable and interesting area for the public since they have a multitude of operations to observe. While this grouping of the activities around the public areas is important, the size of the space allotted for these services and concessions should also be studied so that the area designated or constructed for their use will be fully occupied and a maximum revenue obtained therefrom.

"Tailored" Airport Analyzed

Briefly, an outline to arrive at a "tailored" airport suitable to the individual community would be as follows:

(Continued on page 61)

Non-Scheduled Cargo —A Challenge to Airports

Are your loading facilities ready for private cargo carriers? Accommodations for itinerant operators pose numerous problems.

By JOHN H. FREDERICK

SOMETHING new is rapidly coming into the business of running an airport. This is the increasing need for handling air cargo and providing facilities for it. Until recently the airlines have attended to all airport loading, unloading, handling, storage and the like concerned with air express and cargo because they have been the only ones who had any to handle. But now the non-scheduled and private carrier of air cargo is entering the picture. Planes suitable for cargo transportation are rapidly becoming available and already we have two organizations advertising their readiness to pick up and fly cargo to any airport in the United States. Suppose one of these planes should land at your airport. Would you be ready with the proper equipment and facilities to help it unload?

Don't think for a minute you would use any airline equipment that might be standing around idle. It is doubtful if the airline people would favor such use for a competitor. And you won't use the airline ground personnel, either. But the non-scheduled, itinerant, or private cargo transport will not have a crew ready to unload when he lands; he will not have any ground equipment available; he won't have any storage sheds; he won't have anything but a full plane to be unloaded. Will many airports be ready for this business? Will they be ready for the additional source of revenue they can develop if they can provide cargo handling services? From recent conversations with airport managers in various ports of the country the writer doubts if they will be. Very few seemed to have the faintest conception of what this cargo business may amount to within even such a short time as the next twelve months.

Consolidated cargo handling may be a solution for some airports. Four or five men, such as those pictured, could easily handle cargo for all non-scheduled air carriers at some airports.

Characteristics of Air Cargo

Of course the kind of goods that will be carried by air will have a very definite effect on the airport problem in handling them. Certain things most surely will not go by air. These are things that have no particular need for speed or which cannot bear the high cost of air transportation compared to the slower ground carriers. Products that will surely not go by air are the non-perishables, the bulk goods, the goods of a very low value per unit of weight and bulk. Such goods do not demand high speed of transport or special care in handling and can not absorb anything but the lowest transportation costs and include: (1) products of mines, (2) non-perishable agricultural products, (3) non-perishable animal products, (4) forest products, and (5) most heavy and low-cost manufactured goods. The airport manager therefore will not be faced with building a grain elevator on his airport, nor coal or ore storage and handling bins, nor lumber storage racks and the like.

On the other hand, the goods that will eventually move by air, as rates are reduced, perhaps a lot sooner than some people think, are the perishables; the goods requiring special handling; the goods of high dollar value per unit of weight and bulk. By perishables we mean those goods that deteriorate with loss of time in transit or are seasonal in nature. Goods like these have always demanded the highest speed of transport and are normally capable of absorbing high transportation costs. We may expect, therefore, to see considerable quantities of the following moving through the airports of the country: (1) perishable agricultural products, (2) perishable animal products, (3) many high value manufac-

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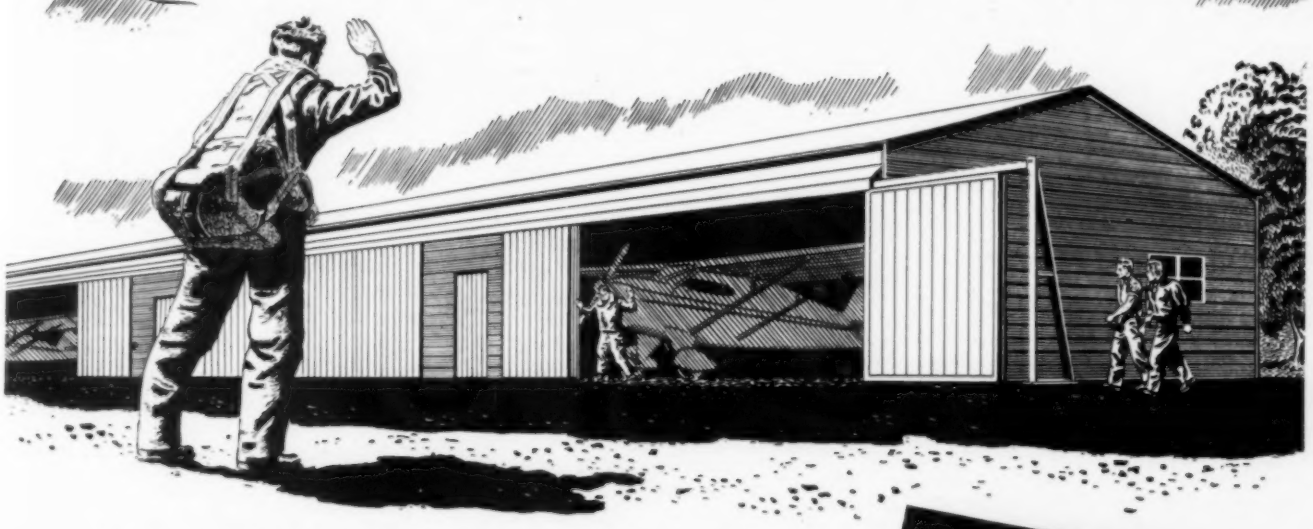

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tured and miscellaneous products, (4) items normally carried by fast less-than-carload freight (usually handled by the freight forwarders), (5) items normally carried by long-distance motor trucks, including household furniture, and (6) the greater part of articles moving now by railway express.

For a considerable period of time the goods shipped by air will not be very heavy in weight. It is reasonable to assume, therefore, that airports will not have to be provided with facilities for handling, loading and unloading, very heavy unit packages. The experience of one airline in handling large quantities of air express and air cargo during the later years of the war gives a clue to what we may expect as to densities of air cargo. This is shown in Table I. As to the future, it has been estimated that the average cargo densities of some of the possible air cargo traffic will be that shown in Table II.

Wide Variety of Planes

There are going to be all sorts of cargo carrying planes. Plane design, just like the nature of the cargo itself will influence the type of cargo handling equipment necessary at an airport. An airline can standardize on certain plane designs and have cargo handling equipment to fit, but the airport manager will have to be ready to handle almost any type plane that may be flown in by a non-scheduled cargo operator. We are certain to have at least the following types of cargo compartments to deal with:

(1) Under - floor compartments, sometimes referred to as belly pits.

(2) Above - floor compartments which are the normal type.

(3) Permanent compartments equipped with all the necessary apparatus to handle the cargo within the plane.

(4) Convertible compartments which may be used sometimes for passengers and sometimes for cargo and may or may not be equipped to handle the cargo expeditiously within the plane.

Access to cargo will be made in various ways, which again will influence the amount and type of ground cargo handling equipment that must be available.

(1) Through a large or small or medium-sized door in the side of the fuselage.

(2) Through an opening in the nose of the fuselage.

(3) Through the rear of the fuselage by:

(a) Swinging the tail out of the way.

(b) Mounting the tail on twin booms.

(c) Mounting the tail very high to allow a ramp to drop down for loading.

(4) Through an opening in the bottom of the fuselage.

This variation in types, size and arrangement of cargo planes complicates the airport handling problem considerably and presents greater problems than have freight cars or trucks.

TABLE I

AVERAGE CARGO DENSITY AT CERTAIN STATIONS

Station	Lbs. per Cu. Ft.
Los Angeles	20.2
San Francisco	19.8
Chicago	14.6
Dallas	12.3
New York	11.8
Atlanta	6.3

TABLE II

AVERAGE CARGO DENSITY OF POSSIBLE TRAFFIC

Product Group	Lbs. per Cu. Ft.
Perishable Agricultural	13 to 40
Perishable Animal—meats	36
Miscellaneous and Manufactures	35
Store Merchandise	10
Less-carload-freight items	23
Moving now by railway express	16

Cargo Handlers May Consolidate

The magnitude of this air cargo problem will vary from airport to airport. But even the smallest will eventually be faced with some variation of it. It is such a problem at some of the more active airports, where non-scheduled operators of cargo planes are already active, that a consolidated cargo handling organization might well be developed serving all airlines and non-scheduled operators alike. It is not unusual, at the larger airports, to see the personnel of one airline loafing around killing time, while the crew of another is madly working to load and unload several planes. Such a performance does not make sense. Why wouldn't a consolidated operation for loading, unloading, storage and the like be more sensible? It is seldom that peak hours for all airlines coincide and even so a considerable saving in manpower would result with consolidation and the non-scheduled operator would have something he could count on. Also, a greater utilization of loading, unloading and handling equipment would permit a larger initial investment insuring a maximum mechanization. It would also develop more specialized and efficient crews.

Such a consolidated handling organization is no answer, however, for the smaller airport. Here it will be largely up to the management, perhaps through some arrangement with a local warehousing organization, to see that certain essential equipment is provided and manpower available on short notice so that any plane arriving to unload or load can be serviced—of course at a price—and also that there is a place to put the cargo awaiting plane arrival or removal from the airport.

The air cargo problem can't be neglected much longer. It is here now.

★ ★ ★

Ingenious loading mechanisms have been devised by the airlines to meet individual problems. This powered escalator, developed by American Airlines, has an indicator on the side and can be adjusted to various heights in anticipation of arriving aircraft. Only one man is needed for operation. Airports seeking to serve non-scheduled cargo operators will need handling equipment of their own.

San Antonio Municipal Penalizes Private Flying

Numerous restrictions against non-scheduled aviation supplement Mayor Gus Mauermann's plan for exclusive privileges to airlines.

ACCORDING to statements of Mayor Gus Mauermann, San Antonio city officials have decided to restrict the San Antonio Municipal Airport to the exclusive use of the airlines. Private flying interests would be forced to operate elsewhere, including Stinson Field, municipally-owned but still controlled by the Army which has not yet reopened it to private flying. Negotiations are under way for return of Stinson Field as a Class 4 airport, complete with hangars and administration building, but progress is reportedly slow. Mayor Mauermann recently announced that "all private fliers, including transients and four flying schools and services now operating at the municipal field, will be moved to Stinson Field" when the city regains control of the latter.

Sales, Repair Shops Discouraged

Private flying has been handicapped for some time at San Antonio Municipal Airport. For example, it has no shops for non-scheduled aviation, and the four operators based there, plus San Antonio residents who base privately-owned airplanes at the field, have to fly elsewhere usually to nearby cities, for the bulk of their repairs. It has been reported that efforts to install a repair shop were stifled by requirements of the city, which would (1) charge 2 cents per square foot for ground rental, (2) enter into a lease permitting construction of a building only on a month-to-month basis, (3) assess a 5 per cent gross receipts tax on the shop work and (4) charge $25 monthly "office" rent even if the office were in the building to be erected by the tenant. There were several other conditions of a minor nature. The effect has been to discourage the opening of a shop by non-scheduled operators.

On many municipally-owned airports such shops have been encouraged as good business. Dallas, Atlanta, Kansas City, Chicago and other cities attract international aviation trade through such airport enterprises. San Antonio is depriving itself not only of additional revenues for the airport but for city merchants, hotels and the like. For example, a well-known operator on Dallas' Love Field enjoys a large volume of business from Latin America, and one of his customers from South America recently loaded down his twin-engine airplane with the finest shoes, clothing and similar family supplies he could find at Neiman-Marcus. In a few days this customer spent a small fortune at Love Field and in downtown Dallas—the non-scheduled operator's excellent aircraft repair facility brought him to town.

There are other ways in which the San Antonio Municipal Airport has been penalizing that city and its private flying interests. One of its four operators attempted recently to obtain a dealership from the manufacturer of one of America's most popular personal airplane. When the distributor learned the operator was required to pay the City of San Antonio a 2½ per cent gross receipts tax on the sale of new planes, and a 2 per cent similar tax on used planes, he turned down the deal. The lack of a repair shop was a serious handicap, but the sales tax was carrying it too far. Another dealer could open up on a private field elsewhere in or near San Antonio and make a better showing.

Excessive Fees

The city collects from operators on San Antonio Municipal in more ways than one. For example, it extracts the equivalent of two service charges, as follows: The operator is not allowed to handle his own gasoline but must purchase it from the city or its agent —at retail prices. If the operator uses 3,000 gallons of gasoline per month, he is deprived of the right to save the customary ten cents or so per gallon, or $300 in this case, by handling his own fuel. All of this, of course, is not clear profit to the city when it handles the gas, and the city is entitled to charge the operator some reasonable amount for using the taxpayers' airport. But San Antonio Municipal collects more than the gasoline privilege — it assesses an "operations charge" based on each airplane used by the non-scheduled operator. This charge begins at $50 per month for the first airplane, $30 for the second, $25 for the third, $20 for the fourth and $10 for each additional plane. To operate six Cub trainers, for example, one would pay the city $145 monthly in "operations" or landing fees.

The operator also pays the city 8 cents per square foot for office rent, 3 cents per square foot for office storage space, and a minimum of $15 monthly per airplane for hangar storage (he must move his own airplanes in and out).

Exclusive Base for Airlines

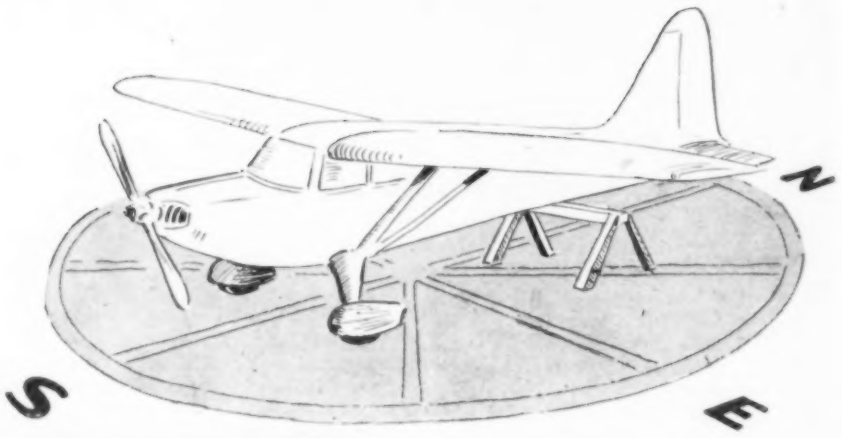
Frotests have met with no success and Mayor Mauermann frankly says he intends San Antonio Municipal Airport to be used chiefly by the airlines. Under his plan the city-owned and operated airport would become the exclusive home of Continental, American, Eastern and Braniff, plus "a few others we expect to get," he told the newspapers recently, adding: "It will certainly make the Municipal Airport a safer field for the commercial lines, which can operate without interference by or to private fliers. The private interests, in turn, can enjoy a new freedom at Stinson Field."

The San Antonio condition is viewed as an experiment by some observers —an experiment in which the advice or counsel of private flying interests have either been uninvited or ignored. Those who oppose the experiment doubt whether the city hall can justify such drastic restrictions as would bar all private flying from the facilities provided at taxpayers' expense and operated by the city. While Stinson Field is promised as a private flying center, opponents of the Municipal Airport restrictions believe Municipal Airport is adequate to take care of much more traffic than it now has and doubt that airline fees alone will be sufficient to maintain the field and its operation. They also doubt that the city will offer any improvement in fees and charges at Stinson Field over those now being enforced at Municipal.

Other cities will watch the San Antonio situation with much interest. Municipal planning in airport management is undergoing experimentation in many sections. Some cities are finding it necessary to readjust earlier plans for airports, and private enterprise is building numerous airports for private flying, thus reducing, in some cases, the need of municipal expenditures. Still other cities, like San Antonio, plan to provide separate municipal facilities for airline and non-scheduled operations. ★ ★ ★

Check That COMPASS

By JACK ANDRESEN



MANY airport owners and managers are looking forward to cross-country flying to put the extra jingle in their cash registers. This means that they must keep the customers' interest after their forty or so hours of "circuit and bumps", as the British so aptly say it.

Plans are being made for new hangars for transient, as well as local planes, for better runways, lighting and lunchrooms. This is a good time to include a compass rose which, at very little extra cost, will afford a greatly needed service to the customer.

An informal investigation of the planes at several Eastern airports revealed that not more than one compass out of every four is compensated. From this it looks as though it's not entirely the instrument's fault that so many birdmen navigate by the box car routes and find themselves way up on a side track without a paddle.

An uncompensated compass in a typical lightplane installation can be out as much as 30 to 40 degrees on some headings and right on the nose on others. It isn't necessary to draw a vector diagram to show how far astray one can go navigating with a 30-degree error. Why all these uncompensated compasses then? Let's examine a few cases and see.

Service facilities for airports should include a compass rose to stimulate business by attracting cross-country pilots.

Some "Compass" Cases

First, there's the trusting type who just doesn't know a compass needs anything done to it. He may notice at times that his magnetic bearing doesn't exactly jibe with the check points but he excuses the instrument by blaming the error on drift or unusual variation. Or he may modestly blame himself. A compass rose on the field might start him asking questions.

There was J. Immelman McTruk, who said that he didn't go by the actual compass reading anyhow. He just corrected for his drift and deviation and variation, all in one, by going over a few check points. Then he looked at the compass and there would be his course. Apparently he missed a check point. We haven't heard from him since he headed "roughly west" from Allentown.

Fortunately most pilots realize that a reliable and accurate compass adds to the safety and utility of their ships, especially when flying cross-country. But among these are the innocent boys who just hack an extra hole down in the most convenient corner of the panel, stick in a good compass, and spend $10 to have an instrument mechanic compensate it. They are really surprised to see deviations you can't count on your fingers cluttering up the deviation card. Let's listen in on the brain waves from a typical pilot behind one of these compasses. "Let's see now, the compass reads 240 degrees, but the card says for 240 degrees, steer 248 degrees. There's that railroad intersection, now to make a 30-degree turn to the right I should end up at 270 degrees—no, it should be 278 degrees, I guess—oh, no, the card says for 270 degrees, steer 283 degrees. Let's see now—ah, there's that stack that's on the chart; darn good, these charts!" The book says the compass should be placed as far away as possible from any iron, unshielded wiring and the tachometer so as to reduce the magnetic disturbances; but this fact has not registered with him. The book also says shock mounting is a big help towards accurate performance and long life.

The lad who bought a cheap, poorly designed compass that cannot be compensated no matter where it is placed in the cockpit, is truly unfortunate. He might just as well try to sell it to some other gullible soul and beg, borrow, buy or wait for a good one.

Typical Procedures

But now let's get to the well-equipped plane with a good compass or direction indicator properly shock-mounted in a thoughtfully selected position on or above the instrument panel. An instrument mechanic is not available and a cross-country hop is planned for the week-end. We have a non-magnetic, brass screw driver at hand and a box or jack for supporting the tail wheel in the cruising flight position. All tools, accessories and movable parts of the plane are in their customary cruising position. OK, we push or taxi it out with a grim determination to let nothing short of a full gale keep us from getting the compass checked today. From this point on there is nothing by any other name so sweet as a rose—a compass rose.

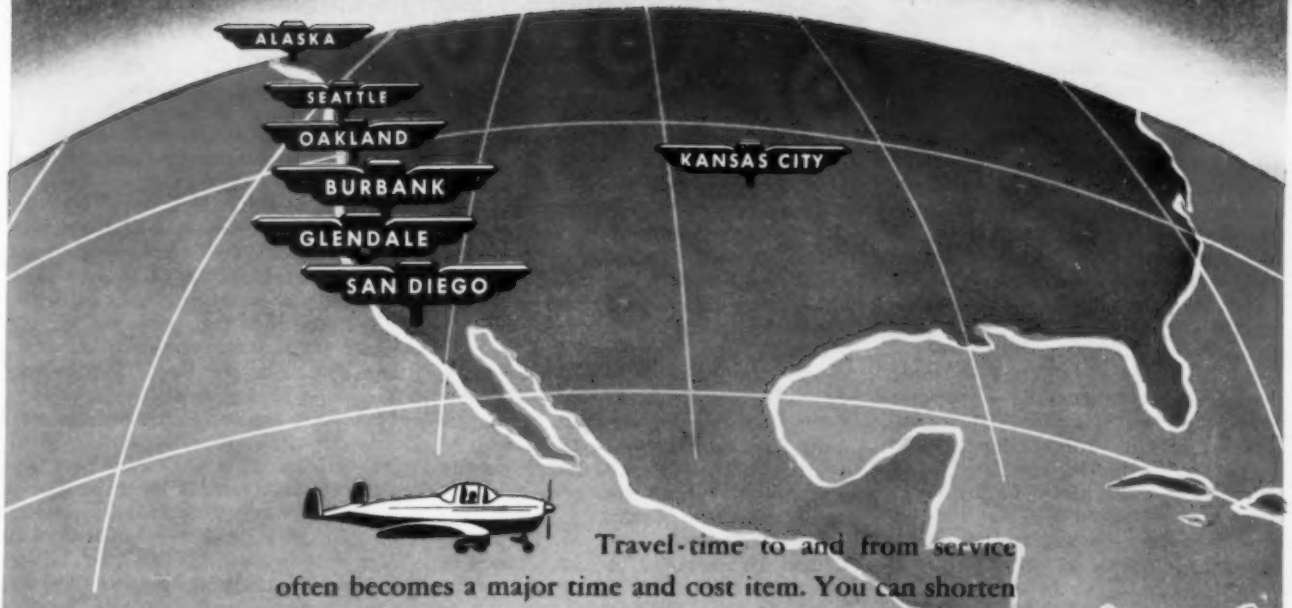
Now, if the grasshopper is tied down at one of America's numerous mud-or-dust aerodromes, some pilots go through a lot of preliminaries. The exact procedure is in the realm of the occult. There's the homespun philosophical method which may start, "If you will stand sixteen paces in front of the hangar and look just a little to the left of that gnarled apple tree, you're looking directly North." Then there's a romantic approach which deals with the points on the horizon where a heavenly body rises and sets on the 21st of June. Of course the local variation (magnetic, this time) is a theory entirely outside the scope of these observations.

Some of the more "practical" prefer to take the compass out of the panel, set the compensators to zero (or remove compensating magnets), and try to sight along the irregular surface of the case while holding the lubber line on the desired headings (quite a trick to get within 2 degrees). These directions can be marked on the ground by an assistant, or objects on or near the horizon noted. The directions being established, they might start making lines on the

(Continued on page 62)

In the West

PAC Shortens *time out* for Fliers



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Too Many LAZY Airports

Inadequate facilities, indifferent attendants, and poorly planned airports plagued this pilot's flight across the nation. His report spotlights a situation needing immediate correction.

By C. A. TYRE

HAVING survived three rather extensive cross-country jaunts during that many years, the writer yields to the urge of venting some of his grievances, impressions and notions, in particular about airports and their servicing, or perhaps I should say, their lack of it.

Our flights originated in New Mexico and took us to Indiana, to Ohio, and to Washington, D. C., respectively. All were undertaken in a light two-place plane with a cruising speed of about eighty. Practically all kinds of summer weather were encountered, ground speeds ranging from 40 to 100 miles an hour were recorded, and a considerable variance in airports and attendants was discovered during a total of about 145 flying hours and approximately 10,500 miles of travel.

Any experienced pilot will smile sympathetically about the prevalence of head winds in my sad tale. Will someone please explain the elusiveness of the tail winds? They come around only to tantalize us after resignation to slow speed has laid a heavy grip upon our spirits, just to show that the old ship can sail along. But never for long. Even before you land, the wind may have changed from friend to foe.

The real object of this essay is to focus attention on the amazingly poor quality of the average airport itself and of its service.

Obviously many of these unfavorable conditions are due to lack of equipment, of man-power and of facilities resulting from the war, but the writer is convinced a tremendous improvement can be made, especially with regard to airport management. Except at the large landing fields, little effort is made to take care of the cross-country flier. Even at some of the good-sized ones there was surprising nonchalance displayed by the attendants, who might or might not gas up our plane at once, who most casually indicated the location of the gas pump to us, and rarely took the initiative themselves to tie down our ship. Both my wife and I were deeply impressed when a young man voluntarily cleaned our windshield, and told him he had broken the record because it had been ignored in more than fifty other ports.

Everyone knows that airports are located too far away from towns and cities. There are indications this is going to be remedied at some places. But in the meantime a large part of the pilot's budget goes for taxis. Few airports have lunchrooms and some even lack drinking water. Frequently the restrooms, if any, remain in the medieval, open-air stage—with no lock, no paper, and swarms of flies.

Little Things Count

More important still is the lack of hangar space. Ordinarily it was necessary to tie down the plane outside. As a consequence, loaded down with baggage and bundles, a radio receiver, some hats, a thermos bottle and a lunch basket, the tired flier emerges from his ship and proceeds to locate some spot to deposit part of his treasure for the night. Otherwise he and his wife must pile all this into a reluctant taxi and later face the icy stare of three or more disapproving porters who must bear such unorthodox gypsy baggage into a hitherto respectable lodging. By now we wonder whoever invented the fable of speedy aircraft travel.

Many airports we visited employed mostly teen-agers as yet lacking in responsibility and efficiency and hence causing this pilot a number of unpleasant surprises. On our last trip these youngsters astonished us with their amazingly speedy approach to our plane. Were they that anxious to serve us? Usually it was a bet that must be settled concerning the make of our ship. Was it a Rearwin, a Stinson, or an Aeronca? After that weighty problem was settled the usual lethargy of airport employes settled upon them.

At too many airports a preoccupied employe would look on indifferently while I struggled with the propeller. Sometimes, when the engine was obstinate, he would finally offer his assistance. At times, however, I would have to break down and request a prop-turner, but I always felt I was imposing.

The condition of many airports in the smaller cities leaves much to be desired. I should like to ask, in passing, why it is that so many are located between a highway and a railway with the inevitable telephone and power lines on either side, and probably high trees on another.

Runways frequently were so rough that as soon as we landed and started rolling, the old crate sounded as if ready to fall apart. On the other hand,

"Well, well, that must be the radio!" At practically every airport the author found curious people who, the minute his back was turned, rushed up to paw over and minutely examine his Luscombe.

Has anybody seen the gasoline attendant?" Here is the author at an Oklahoma field waiting for fuel after which he usually (a) pumps the gas himself (b) discovers the young man inspecting a strut sells gasoline (c) learns the gas attendant doesn't come to work until noon.

there were occasions on short runways when we were grateful to a bump for helping us to become airborne sooner. On some the grass was so badly in need of cutting we were not sure where the runways were supposed to be. After some experiences with these traps, we became rather wary, for the tall weeds often obscured nasty holes, bumps, rocks, puddles of water, and even larger patches of morass. Thus I left with the impression that many airports are safe only for the local fliers who have specialized in daily study and observation of the local crevices, gullies and danger zones.

The writer would suggest that field managers make it easier for the pilot to get an early morning start. Most cross-country addicts prefer to leave at sunrise when the weather is apt to be good and the air smooth. Nevertheless they are often needlessly disappointed because "we don't open till 8 o'clock." Sometimes such a take-off can be arranged by preparing the plane the evening before and paying one's bill in advance.

The writer was somewhat annoyed by the inevitable curious creature found at practically every airport who, once the owner's back seems safely turned, rushes up in mad haste to examine minutely both outside and inside of the ship, and does not hesitate to examine baggage compartment as well as instruments. Generally he has no evil intentions such as stealing. At a gasoline station do the loafers open your car door and inspect everything inside?

Evidence of Deterioration

After landing at 2 p. m. in a fair-sized Texas town, I asked that a window be repaired. The head mechanic assured me it would be taken care of that same afternoon. The next morning when we arrived to take off, was the window fixed? Of course not. To top it all I had to move several other planes out of the way before I could get on the runway.

At one of the largest cities in Tennessee, I was directed to a certain runway to take off. But on reaching that location I was stopped because that was the Army side only. True, the runway was rather busy with military craft and large commercial planes, but not so crowded that one tiny civilian would have interfered. After a brief exchange of words I was told to go ahead. Of minor importance, yes, but one felt like an unwelcome intruder on a field meant for the public as well as the military.

Again, at a small Oklahoma airport the only person about was a woman who told me to go ahead and fill my gas tanks and replenish my oil. She did not know how to operate the pump. Perhaps I should have been grateful that facilities were even available, but it does seem as if some informed person should have been the manager.

Another time, when we landed late in the afternoon at a small eastern city, no one was about at all. In vain I walked about one-quarter of a mile to the weather station to inquire about the attendant. I had waited and wondered a whole hour before he finally appeared. "They can't expect me to stay out here both day and night," he grumbled. There was hangar space here, but the next morning the plane door, which had been locked, had been forced open.

In one of our most prominent eastern cities I arranged for one week's storage and a twenty-five hour check, agreeing on the date by which it should be ready. The morning of the day of my intended departure I telephoned and found that the inspection job had not even been started. Due to a change in plans, I left the plane there another week. When it was removed from the hangar I discovered that the gas tanks, which had contained about twenty gallons on landing, were nearly empty. I was bluntly informed that "sometimes the gas runs out of the tanks when we tail them up in the hangar." The manager made up for the loss by charging me the monthly storage rate, which was somewhat less that what I owed according to the weekly rate. However, the escaping gasoline had discolored the wings and windshield.

Once again in Ohio I exercised my muscles for a half-hour clearing the hangar sufficiently for a passage to the runway. Two employes in the office seemed rather too busy at something else. The lone customer never matters.

Cautiously dragging the field at a town in Missouri where there had been excessive rains the night before, I decided the sod would be safer than the rough looking cinder runway. My decision was wise for after landing and getting a closer view I could see that the cinders had been placed there only recently and had not been packed; in fact their chunks and brickbats provided an ideal opportunity for that much feared nose-over. In spite of my precautions we got stuck in the mud at some distance from the hangar and received help only after my fellow passenger had plowed laboriously through the mire to the hangar and hinted quite broadly that some assistance would be in order. There was no lunchroom or restroom of any sort, and the field itself was particularly treacherous with the high grass, standing water, and soft spots.

The Stranger Pays

We landed at one of the larger Missouri cities early in the afternoon. The office attendant assured me the service would be prompt and dependable, but the wearisome story of a locked hangar, missing service and long search for the absent caretaker repeated itself once again, spoiling prospects of an early take-off.

The airport in an Oklahoma town of twenty thousand is run so unconventionally that a pungent odor of rotten eggs almost overcomes the stranger. Those operating there regularly accept the situation fatalistically, for what is one to do when the owner of the egg-powder plant has the right to dump his shells on the edge of the field because it also belongs to him? This exploiting tyrant has no love for flying or the flier's welfare. Dangerous holes in the runways are not filled, no service is available from the lone female attendant, and the restrooms are even worse than the egg odor. And as for charges, hangar rent is thirty dollars per month. Once I paid a dollar and a half here for a mere tie-down. Suspiciously they refuse hangar space to the visitor. "It is full," they say, but we all know that the manager fears incurring expense in case of fire. Local fliers have to sign all sorts of documents absolving him of all responsibility for damage before their ships are allowed in his sanctuary.

I taxied up to the gas pump at a field in a New Mexico town and asked a fellow in coveralls (the only person there) to "fill her up and check the oil." After he had done so, in the

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course of a friendly conversation, I learned to my embarrassment that he was not an employe, but a local pilot preparing to take a practice hop. On my inquiry as to the whereabouts of the manager, he said he would like to know that himself. He kindly assumed the responsibility of making change for me and selling us cokes, and after a while each of us went our way without my having had the pleasure of meeting Mr. Smith, the invisible manager, with whom I had done business by proxy. Incidentally, this airport had no restroom facilities except the great open spaces.

In one of the largest cities of Texas, I was charged six dollars for about an hour's labor on installing a radio aerial. Perhaps the fact that it was Sunday made labor higher. Or perhaps it was the fact that I was a stranger in town.

Yet once again, at one of the largest Iowa cities considerable delay was caused and an early take-off was frustrated because the gas attendant was not permitted to make change and the cashier did not come to work until 8:30.

Further items would be both repetitious and boring. Those listed give forcefulness to the author's justification in urging the need for airport progress.

I therefore stress, in summarizing, the following defects: (1) Inconvenient location of airports, (2) lack of proper runways, (3) lack of sufficient employes, (4) lack of hangar space, (5) lack of accommodations for body comfort.

We had anticipated these due to the manpower shortage. But less excusable are the following defects in attitude and service: (1) Imposing self-service on the flier, (2) disregarding his need for utilizing the best flying time (3) failure to keep promised appointments and to make needed repairs, (4) absenteeism, (5) lack of consideration and inconveniencing the pilot with much plane moving, etc., (6) giving out misinformation, (7) using women paid for service but who rely on the prerogatives of their sex, (8) occasional insolence, (9) prying, (10) damaging property without even apologizing, (11) interest only in the local fliers, and (12) overcharging the stranger.

There may be no glamour about a civilian plane, but it is hoped it will be the dominant craft in our future skies. And we wonder if these attendants themselves would relish the type of service to which they now subject us.

Friendly Service Counts Most

In some places efforts are resulting in improvements and more hangars, a few bus routes to towns, and occasional lunch counters and restrooms. Quite often now, a former Army flight instructor has been placed in charge, a man who flies himself and therefore knows what is in demand. Those less fortunate in their personnel could

THE AUTHOR, C. A. Tyre, is head of the Modern Language Department at New Mexico College of Agriculture and Mechanic Arts.

advantageously cultivate an attitude of true service and helpfulness such as prevail in every other American business — all the more so when they now fail to provide the accommodations which a transient flier could rightfully claim. Let them remember that their future will be built on their past, that their reputations are being established right now, irrespective of manpower shortage and war emergency excuses.

Of the more than sixty airports visited during my recent flights, a few evoke most pleasant memories, not because of their paved runways, fine buildings and physical equipment (because many were lacking in some or all of these), but because of the friendly service given and general spirit of helpfulness shown to this disillusioned cross-country flier. Orchids to Muncie, Ind., Bowling Green, Ky., Springfield, Ill., Butler, Pa., Urbana, Ohio, and especially the Curtis-Parks Airport in East St. Louis, Ill. The two last mentioned were outstanding and could serve as an example to many others. Unwavering and prompt courtesy during our entire delay there, frequent telephoning for accommodations, voluntary information about difficulties and advantages, friendly conversation at all times and by every single employe on these fields almost made us outcasts wonder if we had had a dream of the airport of the future, or if someone really considered us "desirable aliens." All ships including ours were rushed into the hangar at the slightest sign of rain. Flying magazines were on hand. Evidence of the fine CAP work could be noticed. Valuable data on future flying developments encouraged weary grounded travelers. Rides to town were arranged for us without even requesting them and lodging was sought for us persistently until acquired. Cleanliness, comfort, and even food were present, although these were not stopping places for the transport liners. They are the ray of hope, the samples of what can be done—in fact, a much needed reassurance.

★ ★ ★

TAILORING AIRPORTS

(Continued from page 51)

(1) Gathering of all economic, occupational and personal information from the community and its population including the surrounding trade areas and smaller cities.

(2) Consideration of all adjacent population areas which have the potentiality of either aiding or impairing the community's airport operation.

(3) Careful analysis of the data gathered so that the estimate of use to be expected will be ascertained accurately.

(4) Determination of the present need for airport facilities by interpreting the information gathered.

(5) An estimate or projection of the future need based on the information gathered.

(6) Planning the airport so that it fits the community need at the present and so that it can be expanded to meet the community need at any time in the future.

(7) Adjusting the plan of the airport to meet the financial ability of the community and to reflect the possible revenues that can be obtained from the airport's operation.

(8) Designing each phase of the airport and its facilities and orienting these services and facilities in a pattern whereby the maximum amount of revenue can be obtained with the minimum investment.

An analysis of the features shows that in many cases the financial success of an airport's operation does not hinge upon its management alone. Some airports have continuously operated at a loss although they were excellently managed. In such cases little or no thought was given, during the planning and construction, to the fact that an airport must derive its major revenue from the local area.

At the present time, when much planning for airports is being done, this fact should be considered very carefully, so that airports which are to be built and others which are to be expanded can have at least a possibility of becoming a profitable operation. Much of the future of aviation will be affected by the degree of financial success which airports attain. To assure the expected aviation development in each community, area and in the nation, every effort must be made to "tailor" airports to the community need, thereby providing for a successful operation. ★ ★ ★

CHECK THAT COMPASS

(Continued from page 56)

ground and eventually a reasonable facsimile of a compass rose will be evolved.

The Correct Method

It's true, a pilot might go through all this, but would rather fly to an airport where there is a compass rose. For the use of the thing he'd probably feel obligated to at least top off the tanks and might even go out of his way to get other service jobs done there.

On the other hand, if the eye-of-the-artillery is hangared at one of our multi-runwayed, paved, well-equipped, municipal airports, we just line her up with the plainly marked directions of the rose and follow the simple instructions that usually come with the instrument, breaking it up with a little exercise as we reorient the fuselage on each heading.

Some compasses are provided with a series of loose magnetic bars, which are placed one at a time in holes provided for them, to accomplish the compensation. A quicker and more precise job can be done with the screw type (polyphase) compensators found on the more modern instruments. Twenty or thirty minutes should finish the job including the filling out and dating of the deviation card.

Swinging the compass need not always be accompanied by a compensating job. Even if it is never compensated, swinging it regularly on a rose will allow you to note the deviations on each heading and to see if it is getting any worse. This can be done in ten minutes if a compass rose is available.

So while new hangars, gas pits, a good wind tee, a bright new sock, a lot of grading and possibly paved runways are being planned, how about a big, distinctive compass rose permanently constructed on the field? Make it level and clearly visible from the air. It can be made into a distinguishing feature of the area and will pay dividends in extra business, more cross-country flying and good will. ★ ★ ★

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Water-in-Fuel Probe Hits Outmoded AAF Device

Following investigation of water-in-fuel problems, the House Committee on Military Affairs recommended abandonment of the present segregator on fuel trucks and trailers used by the Army as standard Air Force equipment. In addition, the Committee recommended the Air Forces make "an investigation with a view to determining the motivating factors existing in the Engineering Division of the Air Technical Service Command at Wright Field, which have caused adherence to an outmoded device."

As an interesting side-light, the House Committee asked the CAA for a report on water-in-fuel accidents in civilian aviation. Seventy-nine civilian crashes, all attributed to water in gasoline, occurred between January 23, 1942, and December 23, 1944, the CAA report disclosed.

The House Committee also recommended the Air Forces appoint trained fuel officers at each level of organization to have responsibility for standardizing, procurement, transportation, and handling of gasoline and other fuel.

Asa Rountree Resumes Alabama Directorship

Captain Asa Rountree, Jr., has resumed the position of Director of Aeronautics for Alabama, from which he has been on military leave.

Rountree was appointed State Director of Aeronautics shortly after the Alabama Aviation Commission was established in 1935 and served in that capacity until the war. During that period he arranged or assisted in arranging over fifty projects for the construction or further improvement of twenty-nine airports at a cost of more than $7,000,000; the purchase of over 7,000 acres of land for airports, construction of hangars on sixteen airports; construction of paved runways on twelve airports; the painting of more than 700 air markers; the inspection of 291 proposed airport sites in ninety-one localities; the establishment of new airline routes and facilities; the location of airways navigational facilities; advance preliminary plans for over fifty potential airport developments; field maintenance, and the like.

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Widespread Discontinuance of Control Towers Threatened by Lack of CAA and Municipal Funds

An early shutdown in 1946 is in prospect for many of the nation's 103 airport traffic control towers unless funds are provided. Twenty towers have already been closed. The Civil Aviation Legislative Council declared the prospective shutdown is caused by removal of Army and Navy operations from many airports. This will deprive the CAA of Army and Navy funds for tower operation, the Council explained, adding that many municipalities are financially unable to maintain the service.

Faced with the problem of closing down or restricting service within the next few months, the CALC has appointed a committee to study the problem. Members of the committee and the organizations they represent are: William L. Anderson, National Association of State Aviation Officials; Melvin Nuss, American Association of Airport Executives; and William P. Redding, National Aeronautic Association. Wayne Weishaar, Washington, D. C., Aeronautical Training Society, is secretary of the committee. Other organizations on the CALC roster are the Air Transport Association, Aircraft Industries Association, Aviation Distributors and Manufacturers Association, Feeder Airline Association, National Aviation Trades Association and the Aviation Insurance Group.

A list of cities in which air traffic control towers have been discontinued by the CAA was made public by Col. A. H. Near, Louisville, Ky., chairman of the Committee on Control Tower Operation of the American Association of Airport Executives. Col. Near also listed control towers likely to be discontinued by the CAA because of loss of funds due to removal of military aviation operations. ATC towers already discontinued include: Tri-Cities, Bristol, Tenn.; Mobile, Ala.; Augusta, Georgia; Burlington, Vermont; Philadelphia, Penn.; Lynchburg, Va.; Raleigh, N. C.; Chattanooga, Tenn.; Battle Creek, Mich.; Couer d'alene, Idaho; Pocatello, Idaho; Helena, Montana; Ogden, Utah; Palm Springs, Calif.; Daggett, Calif.; Fairbanks, Alaska; Anchorage, Alaska; Indianapolis (Stout Field), Ind.; Tampa, Peter O'Knight, Fla.

CAA towers which Col. Near expects to close soon unless funds are provided are: Baltimore, Md.; Hartford, Conn.; Niagara Falls, N. Y.; Providence, R. I.; Harrisburg, Pa.; Petersburg, Va.; Charlotte, N. C.; Greensboro, N. C.; Bismarck, N. D.; Fargo, N. D.; Louisville (Standiford), Ky.; Rochester, Minn.; South Bend, Ind.; St. Paul, Minn.; Abilene, Texas; Kansas City (Fairfax), Kansas; Hutchinson, Kansas; Bakersfield, California; Phoenix, Arizona; Sacramento, Calif.; Winslow, Arizona; Billings, Mont.; Yakima, Wash.; and Akron, Ohio.

Conference Committees Reconciling Lea and McCarran Airport Bills

Following House approval of the Lea Bill and Senate passage of the McCarran Bill, conference committees of both the House and the Senate have yet to reconcile terms of the two proposals for a program of Federal aid for airport construction. Before the program can be started, perhaps during the summer of 1946, Congress will have to pass and the President will have to sign compromise legislation reconciling the two bills.

Although McCarran's S-2 and Lea's HR-3615 are similar in many respects, they differ in several important provisions. The Lea Bill provides a total of $700,000,000 of Federal funds to be matched locally, of which $50,000,000 is to be spent on projects in the territories and possessions; the McCarran Bill authorizes $375,000,000 without specific allocations to the territories or possessions. The Lea Bill provides a maximum period of ten years, but permits expenditures at a rate of $100,000,000 annually. McCarran Bill provides for a five-year program. Lea Bill provides that any public agency can apply for and receive Federal airport funds unless their state governments legislate otherwise; McCarran Bill channels all funds to the states unless they fail to set up an appropriate agency to handle them and fail to match Federal money. In the Lea Bill, 75 per cent of the amount allocated each year is to be apportioned among the states by a formula based on population and area, the money to be made available through CAA by state units and spent at any time during duration, without distinction as to class of airport, while the remaining 25 per cent of the funds would be allocated at discretion of the CAA Administrator; under the McCarran Bill, 65 per cent of the money is for Class 1, 2 and 3 airports and is allocated to state commissions or agencies on the basis of population and area, unused portions to be reapportioned to other states, while the remaining 35 per cent is earmarked for Class 4 and 5 airports expressly authorized by Congress, with further provision that unused allocations for smaller fields can be used for larger airports under agreement by CAA and the state. The Lea Bill does not provide Federal subsidy for land purchase, but does allow Federal condemnation at local request; McCarran Bill permits use of Federal funds to pay half the cost of land, but bars use of Federal authority to condemn land at local request.

Meadows Is Director of Texas Commission

Asbury W. Meadows of Dallas, operations manager for Essair, Inc., and veteran airman, has been named executive director of the Texas Aeronautics Commission. During the war he was director of Army primary training at contract schools at Fort Worth and Ballinger, and was a flight instructor during World War I.

Arkansas Airports Planned at Conference

Fifty representatives from fourteen Arkansas cities and towns met recently at Arkansas Tech, Russellville, Ark., to stimulate interest in construction of airport facilities, enabling Arkansas to take proper advantage of increased air traffic.

Speakers included Hendrix Lackey, chairman of the State Resources and Development Commission, Little Rock, who discussed the possibilities for the overall development of the state's airports to meet an expanding aviation system; and E. W. Martin, business manager of Hendrix College, Conway, who discussed the airport angle from the standpoint of a private flier. W. M. "Bill" Berry, superintendent of safety regulations, CAA Regional Office, Fort Worth, Texas, conducted a question-and-answer session. W. H. Turner, airport section, CAA, told of services rendered by the CAA to municipalities in the planning and construction of airports.

New-Type Metal Doors Feature Porto-Fab Hangar

Turning to principles of aeronautical design for strength and lightness, the Porto-Fab Company of Dallas, Texas, has developed a low-priced, pre-fabricated two-plane all-metal hangar that is a departure from the orthodox "T" hangar. Built of either electro-galvanized steel or aluminum, the curved-roof hangar incorporates a 40-foot door span and 10-foot door height.

New-type doors have been engineered. Four doors, suspended from an overhead track by one caster each, pivot inward to fold against the hangar wall. Each panel is seven feet six inches wide, has a framework of aluminum angles for minimum weight, and is easily operated. A small hinged door is provided at each side of the hangar for entrance without disturbing the sliding section.

The all-steel hangar has a floor space of 1,056 square feet and a 10-foot overall usable height. The curved roof is stressed for a 45-pound live load and 25 pounds per square foot wind pressure.

Use of Surplus Fields Before Purchase Studied

A permit system, whereby prospective purchasers of surplus airports may be able to use the fields before acquiring them from the government, may be instituted by Surplus Property Board as the most practicable system for temporary operation of the surplus fields. Now, such fields are deteriorating for lack of use, decreasing their value. The permit system would provide that the users keep the fields up to standard condition for good operation.

Federal Offense to Cross State Line in Stolen Aircraft

Since President Harry Truman has signed Senator Pat McCarran's Bill S. 374, an amendment to the Dyer Act, it is now a Federal offense to transport stolen aircraft across state lines. In the event that an aircraft is stolen from an airport, state and federal authorities should be notified, giving full details, make, type, model and NC number of the aircraft.

Capital's Need of Two More Terminals Cited

Washington needs two more airports to speed up handling of airplanes during bad weather, according to Hervey Law, National Airport manager. Law said two extra fields would afford speedy landings regardless of bad weather congestion and added that his estimate takes into consideration greatly increased air travel.

"This problem is not an uncommon one," Law explained. "Additional airports are needed in practically every major city for bad weather. At our airport we need instrument control about 20 per cent of the time."

Kentucky Plans Airport for Each County Seat

The Kentucky Aeronautics Commission plans an airport for every county seat and principal population center in the state. If the city is above 5,000 population, it would have a Class 2 airport within a radius of ten miles; if it has a population of 15,000 to 30,000 it would have a Class 3 airport within a radius of fifteen miles, and larger cities would plan airport size on a different basis. A Class 3 airport is planned for the state capital.

The Kentucky plan was discussed by Col. Al Near, member of the state commission and director of airports for Louisville, in testimony concerning the Lea Bill before the House Interstate and Foreign Commerce Committee. During his testimony he criticized municipal "pressure groups" for their efforts to dominate airport fund allocations, and said the major need is for smaller airports for private flying in smaller cities and towns.

Buck Steers Resigns from Michigan Post

Sheldon B. Steers has resigned as director of aeronautics for Michigan, according to the state aeronautics commission. Steers was to remain with the commission until his successor, Floyd E. Evans, now a colonel in the AAF, is discharged and able to assume the duties. Steers set up the original board in 1929. At the time of his resignation, he was president of the National Association of State Aviation Officials, a vice president of the National Aeronautic Association and technical adviser to the Council of State Governments. He resigned to put more time to his ranch in South Dakota.

Minnesota May License Airport Service Schools

The State Aeronautics Department of Minnesota is considering the provision of minimum service facilities at the state's airports under state regulation. The regulations would cover licensing and control of flight and ground schools, minimum requirements for seaplane bases, private landing fields, restricted landing areas and auxiliary fields. The regulations were proposed by L. L. Schroeder, state commissioner of aviation.

Court Protects Airport

Zoning for close-in airparks came to focus when the New York Supreme Court sustained the right of the Great South Bay Marine Corp. to improve its seaplane base at Babylon, L. I., after the Village Zoning Board had refused to permit erection of a new hangar. The base was established in 1938 in a section of the village then zoned for airports. The zoning was changed, and the zoning authorities would not permit the erection of a hangar. The zoning authorities were over-ruled by the high court, when it was decided that the erection of the hangar did not constitute the extension of the airport.

Military Training Ends at Hawthorne Field

Hawthorne Field, Orangeburg, S. C., has terminated its AAF civilian contract flying school, two weeks after the field's fourth anniversary was observed. Operated by Hawthorne School of Aeronautics, it was the last contract school to be closed. It trained both United States and French fliers, and the students flew the equivalent of 32,933,238 miles.

Chile Plans Airports

The Chilean Government is planning an airport program of $13,000,000 for airports capable of receiving large trans-oceanic planes. Three types of airports are contemplated: trans-oceanic, transcontinental and interstate.

$4,000,000 Improvements Urged for National Airport

Improvements at Washington National Airport amounting to $3,998,000 have been recommended to Congress by the Budget Bureau. Plans call for extension of the terminal building, the erection of four additional hangars, and building of access roads. The space available after extension of the terminal would be leased to airlines, the Bureau explained, and would guarantee the government 2 per cent, maintenance costs, and complete amortization in 40 years. The four hangars would be for airline use on the same basis.

Rountree Returns to Alabama Commission

Capt. Asa Rountree, Jr., has resumed his position as director of aeronautics for Alabama after serving in the AAF for about three years. Captain Rountree was formerly director of aeronautics for Alabama, president of the National Association of State Aviation Officials, a director of the National Aeronautic Association and a member of the aeronautics advisory committee of the National Safety Council when called to duty in 1942.

Floating Airstrip Developed by British

A floating airstrip is now possible, declare British scientists who have found a way to increase the natural surface tension of water. Ordinary water tension will support a needle, the scientists explain. By putting a flexible synthetic surface on the sea and increasing the tension 400,000 times, they point out, it is possible to support heavy aircraft in mid-ocean.

The "Lily" floating airstrip was devised from this discovery. This strip was used for a landing and take-off by a 9,000-pound airplane. "Lily", its inventors say, will remain flat in waves up to 36 feet from crest to crest.

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SKY'S THE LIMIT

(Continued from page 18)

such luxuries usually goes up with the higher wages so that only a small benefit actually passes on.

Two things could improve this situation. One, the price of aircraft might be reduced by obtaining efficiency in manufacture by simplification, by mass production, or by greatly improved production engineering. Two, by accomplishing a reduction in overhead costs on airports, servicing and operation.

On the reduced first cost of aircraft, we don't expect much improvement. Even though very good aircraft may be sold for two to three thousand dollars and up, most individuals are not in a position to buy and operate them. Improvement, however, might be expected in the service and storage and attendant services. This will call for a different attitude on the part of operators.

We have thought for a long time that the distributed overhead on normal airport operations is too great for the volume of business that can be handled. For example, an airport in which we had an interest for a number of years had three hangars in which some seventy-five aircraft were normally stored. They had all the income from storage, sale of gasoline, and mechanical work on these aircraft. As an aircraft owner, we frequently remarked that the service was not good enough (for lack of adequate number of people to move airplanes in and out, sufficient number of mechanics, etc.). On the other hand, the total income for the whole airport operation was insufficient to pay the mechanics a good living wage, with the result that both the airport manager and the mechanics took the first jobs that were offered them in industry. This is an unhealthy situation that is unsatisfactory to all concerned.

How, then, can we increase the income to the airport without increasing the cost to the aircraft owner? How can we increase the airport's income while at the same time lowering the cost to the aircraft owners? It might be that a consideration of the complete lives of the aircraft owners and of the habitues of the airport such as the employes and the various individuals or companies basing upon the airport, might produce some clues upon which we could work.

Almost without exception there are no airports which have filling stations for automobiles, yet each and every user of the airport can be expected to use automobiles and consequently at some point or other to purchase gasoline, tires, light bulbs, and oil. No airport that we have ever seen has a drug store and yet most drug stores will not serve in an average day the average number of people using a large commercial airport. Every user of the airport also is a drug store customer. It would be extremely convenient to have a drug store right at your place of work so that when your wife comes after you in the car each evening she can buy family remedies, light bulbs, or other essentials. All airport users and workers are grocery store customers. Every user and worker on an airport wears and buys clothing. Many municipal airports do have curio stores, newsstands, jewelry stores, and restaurants but most commercial airports or private airports do not have these; yet they have a large number of people coming through there.

We are familiar with a rural community where there is a little corner filling station and grocery store. Over a period of years, we have watched this store increase its volume of business, support a large family and make improvements on its facilities and operations. These people are miles from any town and have only a few farm families as their customers. Their grocery stock includes meat, vegetables, asprin, cotton gloves, straw hats, etc., in addition to their regular filling station operations. The whole place occupies a little frame building not over 20 x 20 feet. It seems to us that the number of customers they have must be fewer than most airports could expect. Any airport could obtain some patronage from nearby farmers who were not actually airport habitues, providing, of course, facilities were made available to them.

Thus, if the airport operators would make available filling station, grocery store, drug store, and restaurant facilities, perhaps several tourist cabins, and provide quarters for various other kinds of business, and distributed the total overhead among all these people, the pro rata cost could be made lower while at the same time the total income would be greater. It is our notion that an airport could become not only self supporting but a very good profitable enterprise. Somehow or other, storage must be reduced to $10 per month or less. Somehow or other, mechanical work must be tremendously simplified and reduced in cost.

★ ★ ★

Efficiency Helps Any Business

While we are talking about the matter of mechanical charges, and service charges on aircraft, it might be well to say that most mechanical charges could be drastically reduced if the shops were tooled up to handle these matters on a reasonably efficient basis, and if the mechanics had a routine operating procedure.

Sometime ago, we went into a western airport and our generator quit charging. We had the mechanic look it over and he told us we needed a new cutout box. They said they could install one in about one hour. This box cost $30 traded in for ours, and when we finally got the bill, it had taken them thirteen hours to install it. This extra time was largely due to several causes which we personally witnessed. There was no co-ordination between the shop manager or foreman and the mechanic. They spent a good deal of time running around looking for each other to decide what they were going to do. Presumably, we paid for that time. The mechanic found that he had to have somebody to keep from being lonesome, so he brought another mechanic who most of the time did nothing except walk around and hand the other mechanic the soldering iron. Each time the iron was used he pulled out the plug, thereby allowing it to cool off. Each time the first mechanic required the iron, it had to be reheated. Both mechanics stood there twiddling their thumbs until it was hot enough to do the soldering job.

We believe that only so much money can be extracted from any particular customer. However, if that amount is not too great many customers can be found. Thus, the total income can be multiplied by that amount per customer times the number of customers that can be found. Mr. F. W. Woolworth has long believed a greater number of customers can be found each time the price is reduced slightly, and the amount of profits that can be extracted is only proportional to the number of customers, not to the amount of money that can be extracted from each one.

Several times in my life I have run across people who owned aircraft twenty years ago, or fifteen years, or ten years ago, and they say they do not believe they will ever own another aircraft because it cost too much. The kind of inefficiency that we mentioned is what has driven these people away from airplanes. You have to need an airplane awfully badly before you can afford that kind of fooling around. Some kind of incentive plan must be developed to spur all airport employes to do a better job faster and therefore more cheaply.

A great many people have now adopted incentive plans for their businesses and these have been tremendously effective. Such companies as Lincoln Electric Company, Jack & Heintz Company and Beech Aircraft have installed incentive plans which have permitted their employes to get much more money than the average and much more money than they were getting while at the same time tremendously increasing the company's net profit, without charging any more for the services. In fact, it is public knowledge that the people who have tried these plans have been consistently able to drastically reduce the cost of their product.

To the people who say that running an airport is any different from running any other kind of business, we say poppycock. It is absolutely untrue. Applying the same business principles to an airport will result in improved operations in spite of any argument to the contrary. If any airport operator would like to have a copy of an incentive plan that is working, all he has to do is write us and we will furnish one for consideration.

★ ★ ★

The "*lighter touch*" in landings

Swooping in smoothly on emergency runways results from consummate skill by the pilot combined with efficient shock absorption by Aerol landing gear. ◆ Aerols have contributed to aviation's progress for almost 20 years, and new units now being developed for future giants of the sky, testify to the importance of Aerols in post-war aviation. ◆ Our products, serving many industrial fields, are mentioned below. Whatever your needs, Cleveland Pneumatic engineers offer you the benefit of over 50 years manufacturing experience.

THE CLEVELAND PNEUMATIC TOOL CO., Cleveland 5, Ohio

Buy Victory Bonds!

Aircraft Sales and Service

ALTHOUGH consumer deliveries are still being delayed, new airplanes have begun to reach distributors and dealers in many sections of the country, and the factories are expediting production. There are still many gaps and a lot of operators, with nothing to sell, are having difficult going to stay open for the "eager beaver" market everybody has been predicting. We're in a period of transition, with plenty of unknown factors at present but a lot of opportunity ahead. To serve its readers, the Editors of SOUTHERN FLIGHT are inaugurating this new department devoted to aircraft sales and service, a department which will search out significant developments as they occur and provide an authoritative coverage of the rapidly-changing aircraft sales and service picture.

Situation Still Confused

The most thought-provoking summarization of the sales situation we have yet come across was made by a well known personal plane sales manager recently in discussion of proposed sales policies with his dealers. Inviting suggestions for shaping his new program, he made the following comment:

"We know airplanes have never been properly sold. They have, in the past, been loosely merchandised; dealers and distributors almost outbid each other, as though to see how much profit they could give away; few dealers or distributors were ever set up to service an airplane over its useful life, and none of the manufacturers seemed to do much about it. Of course we realize that in the earlier days it was a question of keeping the doors open, and that once an airplane left the factory (by means of cash or a certified check), the big problem was to get the next one off the line, for its sale represented the necessary cash to keep the wheels turning. But that time is over. Personal plane manufacturers, for the most part, now find themselves adequately financed and should be giving considerable thought to the dealer's and distributor's financial success. They should be profiting from the mistakes of the past. But from the information we have been able to glean from dealers and distributors already appointed there has been little or no improvement in the main.

Too Many Dealers

"One company, with a top war production of 1,300 airplanes in their best year, has already appointed 952 dealers and distributors, with no regulation or definite plan as to service. Perhaps, if all these agents are fortunate, they'll get an airplane and a half on which to realize a grand net loss. We realize that the manufacturer is nothing without successful sales outlets, just as the dealer cannot be successful without the complete aid, assistance and guidance of the manufacturer. And when we speak of aid, we mean: (1) ample supply of spare parts, (2) complete line of accessories, (3) factory-trained service men who employ factory methods of repair at the dealer's base, (4) guarantee of ample airplanes to sell, (5) adequate territories based on market surveys, (6) no franchise deposits—let the dealer keep his capital in his own business, (7) planned accounting systems, finance plans and insurance connections, (8) close and skilled supervision from factory men, (9) ample sales helps, (10) sound requirements as regards selling always for list price, with absolutely no exceptions, and sales only to prospects, not to dealers of other airplanes who might be willing to cut the price."

Distributor Eliminated by New Plan

With that background, this sales manager proposes a factory-to-dealer set-up, with supervision of dealers by zone managers—eliminating the familiar distributor as a middle-man. He has divided the nation into three zones, Eastern, Central and Western. Dealers (1) must maintain a complete service facility and factory-trained mechanics; (2) must maintain a minimum supply of spare parts and accessories, which inventory will be kept constant by the factory in that the dealer submits to the factory a copy of each repair, or sale of a spare part, which is automatically replaced by the factory without the dealer having to order it; (3) must never sell below the list price and never sell airplanes or parts to sales representatives of other planes; (4) must not set up other dealers under him; (5) must send the factory a copy of charges for repair prices so the factory can in turn circulate comparative repair prices among all dealers as a guide toward evenutally establishing flat charges for common jobs; and (6) must pay cash in advance for airplanes and parts so that the factory, instead of carrying the dealers, can utilize its capital for manufacturing. Zone managers will call on dealers every month, reporting complete information about his visit to the factory.

CULVER NATIONAL DEALERS MEET: A preview and flight demonstration of Culver's Victory Model culminated a two-day national dealers' meeting at Culver factory in Wichita, Kansas, October 22-23. Front row, left to right: Alton Walker, San Francisco, Northern California territory; Slim Kidwell and Harry Royseter, Central Airport, Los Angeles, Southern California; Jimmy Marshall, Beaumont and Dallas, Oklahoma and Texas; T. Bowring Woodbury, Culver president; Ken Hockensmith and Rege Ott, Portland, Oregon, Washington and Oregon. Back row, left to right: Otis Edgerton, Alexandria, Louisiana, Mississippi, Louisiana and southern Arkansas; Gerald Francis, Lansing, Flint and Detroit, Michigan; I. W. Baldwin and Gordon Diver, Ft. Wayne, Indiana; Judson G. Sherrill, Richmond, Va., Virginia and Washington, D. C.; Robert R. Nadal, Culver general sales manager; Verne Laing, Culver legal counsel; Bill Taylor, Western sales manager; R. C. Faris, Eastern sales manager; J. M. Napier, Culver factory service manager. Attending the meeting but not shown in above photo were Al Mooney, chief designer, and Paul Cromelin of Augusta, Georgia, dealer for North and South Carolina and Georgia.

Advantages of the factory-to-dealer set-up are described as including: It cuts out the middle-man and makes a possible saving to the buyer; it keeps everyone selling the product in close touch with the factory and its policies, and it keeps the factory in close touch with the dealer and his state of success or failure and his treatment of airplane owners.

20 Per Cent Discount and Bonus for Cash

This particular sales manager, who has not yet completed his policies and desires not to be identified until his plan is in operation, has received over 2,000 applications for dealerships. "Maybe we can choose twenty, thirty or possibly forty at the outside, depending on production," he says, adding: "We are looking for an entirely new kind of airplane dealer — not an operator, not a playboy of the old school, but a serious-minded, amply-financed, sound individual who is willing to work hard." He plans to operate on a 20 per cent discount to dealers on airplanes, with a slightly higher discount on factory-built parts and a less than 10 per cent discount on purchased items. This compares with the more or less standard practice in the industry of allowing distributors a 25 per cent discount with dealers getting 15 to 20 per cent under the distributors. The new plan, according to the sales manager, will "pass

Ryan Swackhamer Weiler Rankin

GEORGE F. RYAN, new director of sales for Engineering and Research Corp. (Ercoupe) of Riverdale, Md., was until recently a Major in the Air Transport Command. He formerly headed a banking and investment firm. . . . ROBERT H. SWACKHAMER and WILLIAM R. WEILER have been added to Stinson's sales staff. Both veteran pilots and former instructors, Swackhamer was former B-24 test pilot at Willow Run and Weiler was a Stinson test pilot before joining the sales staff. . . . LT. COL. H. C. RANKIN, recently released from AAF active duty, has become sales manager of Beech Aircraft Corp., for which he was chief pilot before entering the Army. CARL B. WOOTEN, sales manager since March, 1941, was assigned at his own request to position of manager of a factory sales branch, where he will test sales methods, investigate market potentials, study distribution costs and profits and assist Beechcraft distributors and dealers.

some saving on to the purchaser" by eliminating the distributor. "We don't expect any serious disagreement from the dealer on these proposed commissions, for although they are lower than distributors' discounts, the dealers don't have the expense of a distributor and the 20 per cent is actually top dealer's commission if they were working under a distributor," he added. In addition, the factory proposes a 1 per cent bonus on airplanes to those dealers who have taken their quota monthly and who have paid in advance each month for that quota, the bonus to be paid at year's end. The bonus was adapted from the automotive industry.

Delivery by Contract at Dime Per Mile

A delivery arrangement is being considered whereby the factory will contract with an outside organization to make flyaway deliveries at ten cents per mile from the factory to the dealer, one way—a delivery cost cheaper than the customer or dealer would pay by going to the factory after each airplane. This also discourages customers and dealers from going to the factory for deliveries, there to add to the confusion by leaving ships on the field in the factory's care, etc. A service fee of $25 extra might be charged for deliveries at the factory. Rail and truck delivery is out because of the knocking down of the ship, crating and reassemblying incident to such shipment.

While such ideas as this sales manager proposes have various advantages, there is another side to the factory-distributor-dealer set-up, which will be discussed in next month's issue, along with a study of factory requirements for dealers in the way of sales methods, repair facilities, and inventories of parts and accessories.

Here and There

There is talk that Stinson plans to come out in a year or eighteen months with a five-place model, powered by a 210-hp. Lycoming and capable of cruising 170 mph., to sell at less than $5,000. Such a low cost is said to be indicated by studies based on production of a very large order of planes of the same design.

Cessna's new program calls for a full line of personal planes in four price categories, and the company does not want its dealers to sell other models. Several other firms are requiring exclusive rights limiting dealers to one line of planes.

A new aircraft lacquer, Skylac, developed by Monsanto Chemical Company of St. Louis, is said not to support combustion when exposed to flame. Because of its high solids, fewer coats are required and it is sprayed at room temperature without special equipment.

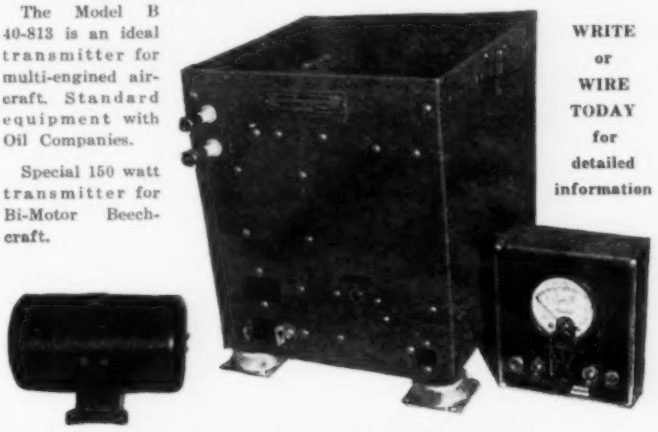
3 Popular Models of the ★★★ WALLER COMMUNICATOR LINE

- **Model AB39, Power 20 watts, 20 lbs., 2 Frequencies $437.50**
- **Model AB39-814, Power 50 watts, 32 lbs., 2 Frequencies $687.50**
- **Model B40-813, Power 150 watts, 62 lbs., 2 Frequencies $1400.00**

Also a complete line of two-way radio combinations for light airplanes. Expertly engineered and built to the most efficient performance standards.

The Model B 40-813 is an ideal transmitter for multi-engined aircraft. Standard equipment with Oil Companies.

Special 150 watt transmitter for Bi-Motor Beechcraft.



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Assembly-line technique in converting UC-78's and other surplus airplanes is used in the Spartan shop at Tulsa, a model for cleanliness and efficiency.

A good example of one-stop service is the conversion work being done on former military planes at the Spartan Aero-Repair Shop at Tulsa, Oklahoma. Spartan is reconverting thirteen UC-78's, a Lockheed C-60 and other types on an assembly line basis. All surfaces are sanded, painted, and hand rubbed. Interiors are completely sound proofed and upholstered. Pilot seats in the UC-78's are completely rebuilt for comfort. All CAA and manufacturers' bulletins are complied with before the airplanes are presented to the CAA as airworthy and given an NC number.

This work of reconversion has been going on at Spartan since January, 1945. Ten Spartan executives, two Lockheed 12's, one Lockheed 10, three twin Beechcrafts, several Fairchild 24's, four Beechcrafts, fifty Fairchild PT-19's, and a number of Taylorcraft grasshoppers have been converted. There is extensive equipment for sheet metal work, one of the few humidity and temperature tested wood shops in the country, a fabric shop equipped for rug and fabric upholstery, an engine shop and test, a propeller shop for any type wood or steel propeller, and a paint shop that is insulated, heated, equipped with a system of exhaust that carries off fumes.

Radar altimeters, released by the Navy, are now available for civilian plane owners. Priced at about $950, the altimeter, designated as the AVQ-6 radar altimeter, incorporates a dual range selection and is distributed by Aviation Supply Corp., Atlanta, Ga. It may be set for a range from 0-400 feet or from 400 to 4000. A 25 per cent dealer discount is offered for this device which includes a 3-inch panel indicator practical only for airplanes having five-place or larger load capacity.

Streamlined aviation courses now denied veterans under the GI Bill of Rights have been recommended by the Civil Aviation Joint Legislative Committee. The GI Bill of Rights limits veterans to $500 per year for tuition, but the new proposal would allow them to draw total tuition due them in any period needed to complete intensive courses in approved institutions.

A new booklet now available contains complete information on the tests necessary to determine suitability of new equipment and accessories for aircraft. The booklet is an outline of the limits and conditions of various tests which both the manufacturer and the purchaser can use to make sure the part will meet actual operating conditions.

Copies are available from Aircraft Industries Association, 610 Shoreham Building, Washington 5, D. C.

Eighty men and women employes of Luscombe Airplane Corp., at Dallas have reported they want to become members of a company-sponsored flying club. Application has already been made for a charter and employes are going ahead with plans so flying can be started immediately. The organization will be conducted on a non-profit basis and it is understood the company plans to sell up to ten Silvaires to the club at a very substantial reduction. Club members will be allowed to fly during working hours and replacement parts and hangar rent will be available at low cost. Costs are expected to run around $5 per month membership dues and less than $3 per hour of flying time.

Direct distributors for airplane floats throughout the United States are being appointed by Edo Aircraft Corporation. This new distribution plan followed the company's recent announcement that production of the 1320 series floats for light planes would start soon with deliveries scheduled for late November. Widespread interest in seaplane flying indicates production next year will be greater than prewar civilian output, the company said. Edo's float equipment has been approved for installation on the Aeronca S-65CA, the Luscombe 8-A, C and D, the Piper J-3-C-65 and the Taylorcraft BC-12. Approval on new types of aircraft suitable for floats of 1,320 pounds displacement will be effected as soon as manufacturers are ready for such tests.

A new Atlanta, Georgia, branch office has been opened by Air Associates, Inc., to put the firm within twenty-four hours of airports and manufacturers in Georgia, North and South Carolina, Tennessee, Mississippi, Alabama and Florida. Other branches are in Chicago, Dallas and Los Angeles, and the home office is in Teterboro, N. J.

Realistic airplane "rides" without leaving the ground are being given in one of New York City's big department stores. Would-be plane owners sit in a complete light plane cockpit and see, projected on a screen, the scenes he would see if he were actually taking off, flying around a field, and landing. These units are scheduled for demonstrations in the nation's metropolitan centers as part of an educational program to popularize flying and also to demonstrate aircraft radio communications systems. The unit will be displayed in connection with Bendix Radio's "Flightweight" low-cost radio communications system designed for personal planes.

NATA Denies Turner to Resign; Convention Postponed Until Spring

Rumors that Roscoe Turner will resign as president of the National Aviation Trades Association are "without foundation," the NATA executive committee declared at a meeting in Indianapolis last month. Officers and directors will remain in office until the convention, postponed from December to "some time next spring." An executive director with a background of experience in the publishing business will be employed immediately. "Safety" regulation, and nothing more, was recommended for non-scheduled aviation.

PREPARED TO SUSTAIN THE *Peace-full* WINGS OF TRANSPORT...

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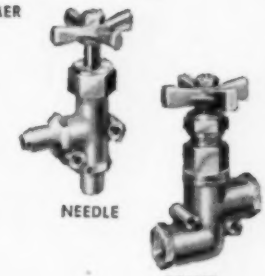

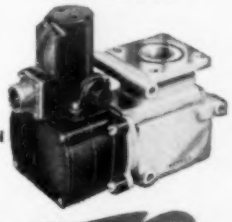

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● For more than two decades... from the peace time years of aviation pioneering through the war time years of mass airplane production... Parker products have won the unqualified endorsement of aircraft builders and transport operators. This recognition has been honestly gained on the proved performance and dependable service of Parker fittings, valves, and related aircraft products. As a result of the experience gained as a prominent manufacturing supplier of the aircraft industry over these many years, together with our organizational policy of constantly keeping abreast of the rapid engineering developments that have occurred in this field, The Parker Appliance Company will continue to sustain the wings of transport in the coming flight age.

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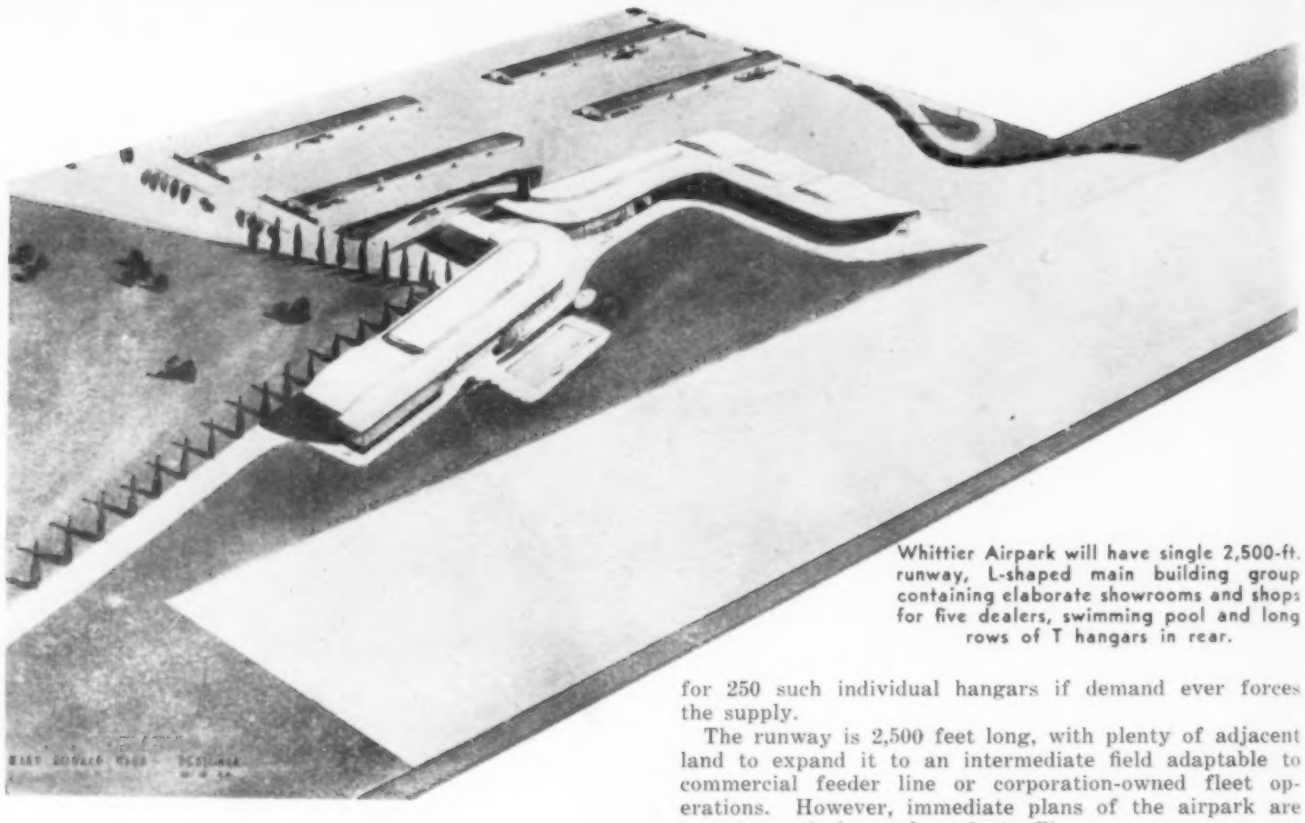

Whittier Airpark will have single 2,500-ft. runway, L-shaped main building group containing elaborate showrooms and shops for five dealers, swimming pool and long rows of T hangars in rear.

Logging The Coast

By.. Midge Winters

GROUND will soon be broken for what promises to be one of the smartest airparks in Southern California—perhaps even a pace-setter for the rest of the country.

Located in the heart of a huge Whittier, Calif., ranch acreage belonging to Leland E. McKeel, it has been designed with the one project in mind: To capture the community center of interest in its area.

And this area, incidentally, is a good one. About fifteen miles from downtown Los Angeles, it is in the southeast section of Los Angeles County—the section which permits about the only avenues for expansion of this great West Coast aviation hub.

The airpark has been conceived with a very practical eye and the conviction that it will make ends meet from concessions rather than from private flying, itself. Consequently, it will afford everything from a 60 x 100-ft. swimming pool to a compact theater. Nor has the personal aircraft dealer been overlooked. A hangar-showroom-shop and office combination has been designed for about five such aircraft representatives, and the latest models in huge, plate-glass show windows will tempt the private flier each time he visits the airpark.

The L-shaped buildings form the nucleus of the project, supplemented with four hangars with twelve T-shaped individual "garages" each. According to McKeel, who recently made his first solo flight, there is enough acreage for 250 such individual hangars if demand ever forces the supply.

The runway is 2,500 feet long, with plenty of adjacent land to expand it to an intermediate field adaptable to commercial feeder line or corporation-owned fleet operations. However, immediate plans of the airpark are to cater entirely to the private flier.

Unlike some of the cities, Whittier is losing no time jumping on the airpark bandwagon and giving it full support with a City Proclamation. While airparks have been suggested for other similar areas in an elaborate airport study by the Regional Planning Commission of Los Angeles County, their local PTA's and other groups are fighting them because of what they describe as "crash hazards".

The Whittier airpark (or airport as McKeel prefers to call it) will be the County's second airpark. Marv Whiteman has his in operation in San Fernando Valley about five miles from the Lockheed Air Terminal at Burbank, but it has not developed much beyond runway and necessary building facilities as yet. Eventually, it will provide "sales, service, and air school facilities with a Country Club atmosphere for the local and out of town private flier."

★ ★ ★

About Time, Too

Speaking of private flying airports or parks, Bob Van Roseboom, chairman of the San Diego Junior Chamber of Commerce aviation committee (also DTM for Western Air Lines), announces that his organization is conducting a week's campaign to educate the citizens of San Diego on the value of private flying accommodations. Like most citizens, it seems, those of San Diego are a bit squeamish about airports located near their homes. Many cities will probably have to follow the San Diego Junior Chamber's example before private fliers get enough landing strips throughout the country.

Bob also announces that the Junior Chamber of Commerce will sponsor an aerocade next month. The first of its kind in the nation, the aerocade will be an exhibition of as many of the nation's personal aircraft as are possible to obtain.

According to present plans, the aerocade will be an exhibit only—no aerial shows. One reason for this is lack of space for same. However, says Bob, they might throw in a helicopter flight or so.

★ ★ ★

Bay Area Service Center

Pacific Airmotive Corporation has leased the entire San Jose Airport, including all facilities, to serve the operators

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20 pages of photographs and descriptions of the most up-to-date methods for all cleaning jobs related to aircraft maintenance. Kelite Cleaning Materials and Kelite pH Control provide the key to efficient, low-cost cleaning in America's great new transportation industry. Send today for your free copy of this helpful manual. No obligation of course.

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You'll want to know more about our new all-metal individual hangar for personal airplanes—a hangar with the most easily-operated metal doors yet offered to the market. Doorway span is forty feet. Inside is 1,056 square feet of floor space, a usable height of 12a feet. Only $960, including doors, F.O.B. Dallas. For a limited time only we can offer corrugated ALUMINUM covering instead of steel for only about 5 per cent additional.

TELEPHONE, WIRE OR WRITE FOR FULL DETAILS.

Departing from old-fashioned methods, this progressive firm has engineered new designs for airport equipment to meet highest aviation standards. Skilled aeronautical engineers have been engaged to assure our customers the most modern and efficient designs available.

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of the San Francisco Bay area with aeronautical supplies and service, according to Earl Herring, president of Pacific Airmotive. The airport, to be known as The Pacific Airmotive Airport, will be controlled by A. A. MacDonald, manager of the company's Oakland branch, with Earl Taylor being the resident representative.

★ ★ ★

State Commission for California

The establishment of a state aviation agency in California is in the offing, with proposed legislation being drafted by the state aviation project committee of the California Reconstruction and Re-employment Commission. The project may be presented to a special session of the California legislature in January. Subcommittees are already at work on phases of the measure. The proposed agency would have charge over airport programs and be authorized to work with the Federal airport program.

★ ★ ★

Western Conference Next Month

The Western Aviation Conference will be held in Sacramento, California, December 11-12, 1945, according to Glen B. Eastburn, of the Los Angeles Chamber of Commerce, who is chairman of the conference. The conference is sponsored by chambers of commerce, the National Aeronautic Association and other aviation groups in cities west of the Rocky Mountains. Last year's conference was held at Los Angeles, with private fliers, airport owners, airline representatives, aircraft factories, educational institutions, and city, state and federal officials participating. The coming conference will be a discussion of airports, commercial and private flying, federal and state legislation and training in aeronautics. Arthur Dudley, manager of the Sacramento Chamber of Commerce, is chairman of the program committee, and headquarters for the conference will be at the Senator Hotel. Chambers of Commerce from cities in Arizona, Idaho, Nevada, Oregon, Utah and Washington are joining with those in California to sponsor the conference.

★ ★ ★

To Merge or Not to Merge

Whether Lockheed Aircraft will make a merger deal with Curtiss-Wright is one of the most spirited conjectures running rampant over the back fences these days. There is apparently more truth in this, however, than the idle gossip which recently threw everyone into a flat spin: That Bob Gross, Lockheed president, would resign to join TWA, that his brother Courtland would go with Chase National in New York. Denials kept Lockheed's publicity department busy for quite a while.

★ ★ ★

Well Done

Hardworking Ted Cate received recognition recently when he was notified that Western Air Lines had received the top award for the best direct mail consumer advertising in the United States for the year 1944-45. This was not only the first time a Western firm was so recognized, but the first time an airline took the honors.

Ted has been WAL's advertising manager for the past five years, and one of the first to develop originality in aviation advertising copy, departing from the old block schedules to paint a true picture of current airline travel.

When he came out with an ad, "Don't Fly", because the going had begun to get tough and there were no seats available, other airline brows went up, but they eventually followed suit. A private flier, he is a captain in the CAP, heads up a squadron. He was a pilot in World War I.

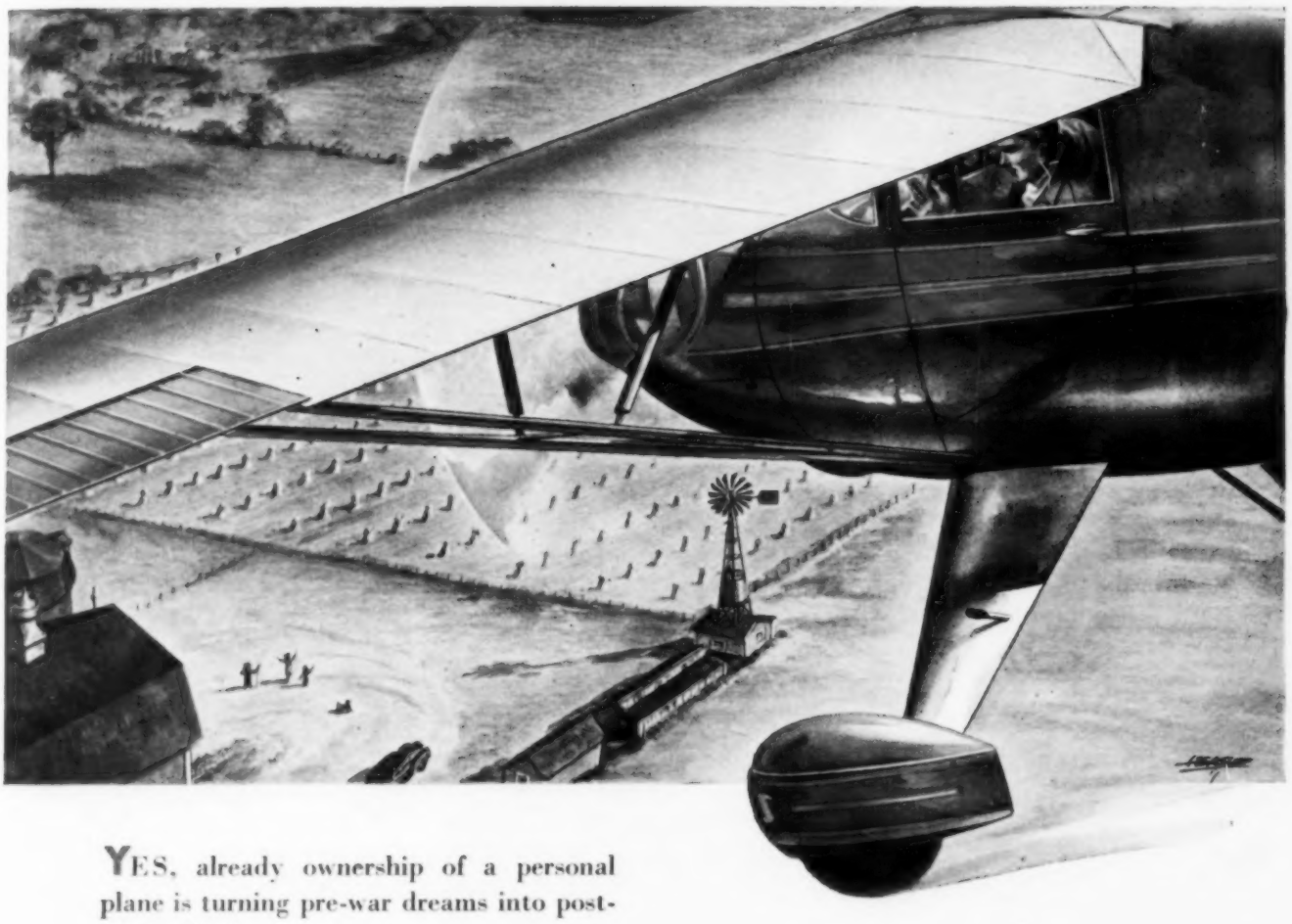
★ ★ ★

Bearcat Intrudes on Fireball

When Lt. Com. John F. Gray put on the first West Coast aerial exhibit of Ryan's Fireball recently, he had company up there in the sky above Brown Field, San Diego. It was a little disconcerting because every maneuver Johnnie went into, the other ship was sure to follow. Turned out it was the F8F Bearcat, which made its first official appearance from an aircraft carrier the following day.

Home for Thanksgiving

...IN YOUR NEW SILVAIRE!



YES, already ownership of a personal plane is turning pre-war dreams into post-war reality!

Not just *any* plane, of course. But an ALL-METAL SILVAIRE! A safe air-worthy job that gets you there—cheaply and quickly.

The new ALL-METAL SILVAIRE by Luscombe reflects once again the proven leadership of this pioneer—the very first company ever to build ALL-METAL personal planes!

For the thrilling Silvaire makes a business trip a pleasure trip—a pleasure trip *a real joy ride!* And here's a plane in the clouds for quality but down to earth for price. Because of its construction—rugged ALL-METAL—it is durable and has a high trade-in value, too.

Style? Looks? Performance? The new SILVAIRE will excite you . . . mail the coupon below for free, descriptive folder. JML Co-L-L2

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AMERICA'S FIRST **ALL-METAL** PERSONAL PLANE

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Trenton 7, New Jersey

☐ Please tell me some more about the *SILVAIRE.*

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Street_____

City_____

CULVER'S VICTORY MODEL

(Continued from page 35)

pany's chief engineer, Al Mooney), an arrangement that eliminates stalls and spins through an ingenious hook-up of the wing flap with the horizontal stabilizer and provides optimum performance at any one of four predetermined settings — take-off, climb, cruise and approach. It is this feature of the new model that opens up for Culver a completely new "mass' market compared to the strictly "pilot" market of the prewar "Cadet".

But Culver has said goodbye to the old "Cadet" and so will we. In bidding farewell to prewar design and performance, Culver has successfully produced a brand-new airplane without regard for the old ways of doing things. Actually, model "V" is a co-ordinated design, a composite airplane in which every item on the ship is designed for and around the "Simpli-Fly" control system. Even the propeller must be two position or con-

Entrance to starter-equipped Model "V" is from leading edge of wing, with windshield tilted up and forward. Baggage compartment is between firewall and instrument panel with extra space behind seat.

trollable pitch. This simplified system, almost revolutionary in comparison with conventional three or even two-control systems, is best described by Al Mooney in the accompanying by-line article.

For the private pilot a lot of so-called minor things are important. Culver has given attention to many of these, such as added roominess, improved soundproofing, adjustable seats with Airfoam cushions, easy entrance from the front of the airplane by use of a retractable step, plenty of room for special radio equipment and extra instruments, and a generous allowance for 60 to 80 pounds of baggage. The baggage compartment is located ahead of the instrument panel and behind the firewall. Access is gained by lifting the canopy up and forward. With one operation your baggage is placed and you're in the cabin without stepping on the seat. An additional space is provided back of the seat for brief cases and personal effects.

With a seven-hour range, a pilot can choose his landing fields with a good, wide margin. You won't have to land in any cow pasture because of gas shortage. Al Mooney says that if your cruising capacity is greater than your rest room capacity, you're getting ample cruising range. He's provided it in the new Culver.

Al says there's no point in trying to heat a cabin if you have holes all over it where the cold air can enter, and no point in soundproofing the cabin if you are letting in engine and prop noise. So he has been working with several companies to provide a combination heater and blower that brings the cool air in through the wing during the hot months yet provides ample heating in the winter. It's mighty refreshing to see some thought and energy going into pilot and passenger comfort.

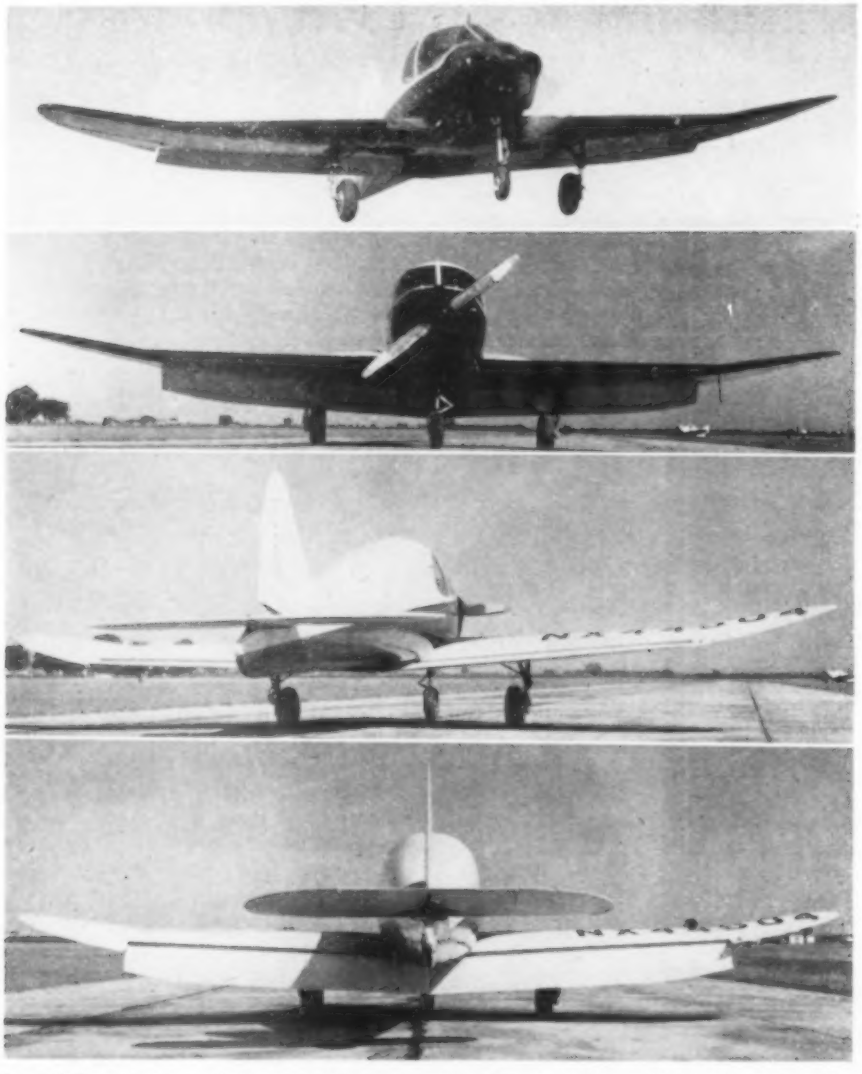
Steerable Nose Wheel

Ground-handling of the airplane is excellent. One of the disadvantages of prewar two-control airplanes showed up when, crabbing into the wind on cross-wind landing, the nose-wheel would come in sideways. Although the Mooney "Simpli-Fly" control system has taken all the heat out of the rudder, the nose-wheel on the new Culver is steerable with the rudder pedals and eliminates the disadvantage of a non-steerable nose wheel in the conventional two-control aircraft.

Sealed beam landing lights are provided and mounted in the leading edge of the wing.

A study of the accompanying front-view photograph reveals a decided dihedral in the wing tips. We learned that this was primarily a production economy. It is simpler to build the major portion of the wing, taking the bulk of the stress, in a straight line.

(Continued on page 78)



Four different views of the new Culver are, from top to bottom: Take-off with partial flap; head-on, with flap full down and emphasizing dihedral in wing tips; quarter view from rear, with stabilizer and flap in cruising position; rear view, with flap full down and stabilizer co-ordinated for landing glide.

Culver's Going Places

THE NEW CULVER VICTORY MODEL IS FLYING NOW. This view of Model "V" taking off from the field at the factory shows its tricycle landing gear, wide-span flap and beautiful lines, including dihedral in the wing tips.

Order Yours NOW!

OUR NEW AIRPORT FOR DALLAS

Dallas needed a new airport for private flying and Gulf Aeronautics is providing it! Work was started some time ago on Marshall's Field — "The Department Store of the Air," located on Buckner Boulevard only eight miles from the Baker Hotel. This new and modern sales and service center will offer complete service by factory-trained personnel. Watch for announcement of our opening date — coming soon!

That "Worth Waiting For" news has finally been released! The new Culver Victory Model is here. We've seen it, and we're a little breathless—yes, breathless—but we're ready to take immediate orders for deliveries beginning after the first of the year.

We'll be ready soon to show you this really new airplane for the private flier at Municipal Airport, Beaumont, Texas, and, when construction is completed, at our fine new base on Buckner Boulevard in Dallas.

Inquiries invited at P. O. Box 3087, Beaumont, and P. O. Box 2887, Dallas. Order your new Culver NOW.

GULF AERONAUTICS

Direct Culver Factory-Dealer for Texas.

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Marshall's Field
Buckner Boulevard, Dallas
Temporary Tel. Dixon 4-2413

Municipal Airport
Beaumont, Texas
Tel. 2561

PRIVATE FLYING ROUNDUP

(Continued from page 37)

as the Kollsman "Scout," and the manufacturer says it will lower almost by one-half the investment in instruments required for safe flying under virtually all conditions a private pilot will encounter.

The new instruments and their prices, as listed by the Kollsman Instrument Division of the Square D Company, include the following:

Standard Altimeter, $24: Range, 0-20,000 feet; single pointer recording 10,000 feet per revolution; stationary dial; settable pointer and barometric setting subdial (inches of mercury); radium-coated pointers, numerals and main graduations which also react to fluorescent (black) light; fits AN standard 3⅛-in. mounting hole; weight 11½ ounces.

Sensitive Altimeter, $70: Range 0-20,000 feet; two pointers; 20-ft. graduations; settable pointers and barometric setting subdial of range 28-31 inches of mercury; compensated; radium coated pointers, numerals and main graduations which also react to black light; fits AN standard 3½-in. mounting hole with cutout for center setting knob; weighs 20 ounces.

Air Speed Indicator, $24 for each of three speed ranges, 30 to 160 mph., 30 to 200 mph., and 30 to 250 mph.: Standard type; radium-coated pointer, numerals and main graduations also react to black light; fits AN standard 3⅛-in. mounting hole.

Small Compass, $24: Standard floating card type, with convenient NS and EW compensating screws accessible from front; unlighted but radium-treated main graduations also react to black light; weight, 9 ounces; fits AN small 2½-in. standard size mounting hole.

Large Compass, $30: Standard floating card type, with convenient NS and EW compensating screws accessible from front; unlighted but radium-treated main graduations radium also react to black light; weight, 15 ounces; fits AN 3½-in. standard size mounting hole.

Vertical Speed (Climb) Indicator, $50: Range 0-2,000 feet per minute up and down; logarithmic scale gives widely spaced graduations near level flight point and closer graduations near limits of scale; compensated for effects of temperature on mechanism but without altitude and temperature compensation or thermal insulation (bottle); radium-treated pointer and graduations also react to black light; weight 17 ounces; fits AN standard 3⅛-in. mounting hole, with provision for zero adjustment screw flange.

Manifold Pressure Gauge, $30; Range, 10 to 50 inches of mercury; standard single pointer; compensated for effects of temperature changes; radium-treated and also reacts to black light; fits AN standard 3⅛-in. mounting hole; weight 11½ ounces.

Kollsman has in process of development a series of new low-priced fuel pressure gauges, oil pressure gauges, thermometers and engine gauge units to augment the new Scout line. The new instruments are being produced in quantity for delivery at early dates to airframe manufacturers. ★ ★ ★

CULVER'S VICTORY MODEL

(Continued from page 76)

You then take care of dihedral in the tips. There is a large amount of washout on these tips with exaggerated dihedral which provides better control at low speeds and contributes much toward eliminating stalls. In addition, this design gets the tips up away from the ground and not so vulnerable to damage.

Single Aileron Considered

Although the prototype airplane has two ailerons, the company might incorporate only one aileron in the production model. Here's what Al Mooney has to say about it:

"The aileron has always been one of the basic trouble makers when the airplane is approaching a stall because dropping the aileron tends to bring the stall on more rapidly. Every time you drop aileron as you approach a stall, you get more drag, which tends to drop the wing and start you spinning. In 'twisting' the wing you produce more and more drag which will put you in a spin. But when you have only one aileron on the left side and wash out an equal amount of space on the right side, if you raise the left wing to a higher angle in order to turn to the left, you will produce increased drag on the right side and decreased drag on the left, or at the high angle, and as you approach a stall you'll roll instead of spin. When turning to the right, the aileron should be dropped to neutral position and the washed-out wing will pull you around. Due to this 'twisting' effect, you are putting pressure on the tip toward the way you want to turn. This yaw works on the wrong tip when you have two ailerons."

The airplane incorporates new rubber-and-nylon gasoline tanks developed by Goodyear. They are located in the leading edge of the wing and carry 35 gallons. In fact, the peculiar shape of the wings may be attributed to the designer's desire to place the center of gravity well forward — a major item in the overall co-ordinated design around the simplified control system. Hence the gas tanks in the leading edge of the wing and practically on the center of gravity. By placing the c.g. well forward, considerable built-in stability results as another major contribution to anti-stall characteristics. The c.g. of the new Culver travels only slightly regardless of loading which eliminates those well known incidents where improper loading results in too much c.g. back-travel and structural loadings far in excess of what they should be. With the "V" model, when it's set for high speed, the stabilizer does the trimming and the tail flap power is only about 2½ g's. "This," says Mooney, "takes care of the fellow who won't read up on his load factors."

Safety Plus Performance

Culver refuses to release any performance figures until CAA Approved Type Certificate tests are completed and the figures certified. They will tell you it's faster than the old Culver. Payload includes a pilot and a passenger, 80 pounds of baggage, 35 gallons of gas, full tanks of oil, 'chutes and essential flying instruments. With that kind of load and a cruising range in excess of 700 miles at a cruising speed which appears to us to be in the neighborhood of 130 miles per hour, it looks like Culver is going places and that the factory has been true and faithful to the cross-country pilot.

"By" Woodbury, energetic Culver president, admits they are shooting for a far bigger market than they sought in prewar days—that the new Culver is for people who want a combination of simplicity, safety, speed and range. If the old Culver owner wants those features, that's fine. But essentially, the new model is for the business man who can't spend a year learning to fly, and who has to have safe, economical and speedy transportation. "By" will tell you that in his model "V" safety and simplicity go hand in hand, that the new Culver is so simple to fly, they can take an average person who has never flown before and "talk" him through a complete take-off, climb, flight and landing the very first time he sits in the plane. Naturally, they don't recommend the novice to cease instruction with that first "talking" lesson, but it does go to show the skeptics there's something mighty new in the personal aircraft field that probably will be referred to later on in the newspapers as "revolutionary", "unprecedented" and "fool-proof". But it's none of these things. It's just a damned good airplane for people who "want to go places". ★ ★ ★

If the "Age of Flight—1950 Edition"—the complete history of Aviation—were ever written, the name Shell would appear consistently as a leader in Aviation Fuel development.

AVIATION HISTORY IN WAR YOUR GUIDE IN PEACE

A NEW PAGE is turned—and the same Shell Research that first supplied our military aviation with the "makings" of 100-octane in commercial quantities, today is concentrated on the development of finer Shell Aviation products for America's peacetime planes.

Now that the black skies of war have cleared away once and for all—and we can at last go "all out" to develop peacetime aviation – Shell refineries and laboratories will continue to develop high-quality aviation products.

You may expect to see more achievements like these already-famous Shell "firsts":

First to supply the Army with 100-octane fuel in commercial quantities . . .

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You will find this brand of advanced thinking—backed by the full force of Shell Research facilities—reflected in the quality of AeroShell lubricating oils and greases, and Shell Aviation Fuels.

SHELL

FINER FUELS FOR THE AGE OF FLIGHT

GOSPEL ON WINGS

Rev. E. L. Mason and some of his flock are shown in this snapshot. That's him leaning against the wheel. Notes penned on the picture include one pointing to an unclad native child who "forgot to get dressed."

REVEREND E. L. MASON, Beaumont's "Flying Parson," was always confident he could fly anywhere, any time. Now the boys around the Beaumont Municipal Airport are convinced the good Parson can do just that, for word comes from darkest Africa that Mason has safely come through his first round as the dark continent's flying missionary.

"God is my co-pilot," Reverend Mason explained in a letter to Jimmie Marshall, well-known Beaumont and Dallas operator, "and I'll come through." Soul saving in Africa by airplane opportunity, is very successful and next year Reverend Mason will add another plane to his operation.

Although Africa's pioneer flying missionary has had many hectic moments, he has come to like his old Sikorsky amphibian which proudly carries two large emblems on its hull. One emblem reads, "Christ For All, All For Christ," and the other is the colorful insignia of the Civil Air Patrol's Third Task Force, in which the Sikorsky operated on anti-submarine patrol during the war. Reverend Mason bought the second-hand amphibian last winter in Connecticut and, after Marshall had checked him out, crated the plane and shipped it to Africa.

African Test Hop

How the flying missionary uncrated and reassembled the Sikorsky in Africa, and his first flight experiences, make up a hair-raising episode in the evolution of evangelical aviation. An Army outfit stationed nearby helped out. Says Reverend Mason:

"We had to uncrate this thing right in the middle of the forest and partly assemble it, then pull it twenty miles to complete the assembly. First thing you know we found there wasn't a test pilot anywhere around. The Major said, 'Mason, there she is. We have done all we can. She is all yours.' I summoned all my intestinal fortitude and told them to roll her out. I would take her up right then and there. I warmed her up, tried to think of everything I had ever learned and some things I hadn't, pulled out on the runway and offered an honest-to-God prayer and gave her the gun. Guess what? She took off like a homesick angel. The first landing was a little rough, but I greased the second one in. That brought me the confidence and praise of the whole base, who were watching the test to see if a preacher could really fly. They shook my hand and slapped my back but they'll never know how my knees were trembling when I had to take off.

"Just the same, I am flying the first missionary plane ever to work in Africa and am enjoying it. The farther I fly this old duck the better I like her. She is a natural for Africa and I am getting where I can fly her as well as I could the T-Craft. I am learning to fly instruments by necessity and not choice. The other day I flew seventy miles at 1,200 feet and couldn't see the ground or 100 feet ahead."

Reverend Mason is stacking up hours pretty fast; he wants Zweng's latest book for commercial pilots and instructors, a copy of the revised Civil Air Regulations, a renewal subscription to SOUTHERN FLIGHT and a membership emblem from the Texas Private Fliers Association.

WATCH THAT STALL

(Continued from page 48)

never let the nose remain downward too far or too long.

Nearly everyone will agree that we have needed these stalls for our training program for a long time. Their inclusion in the CAA requirements will eliminate many accidents in the future. Once the student has learned to recover his airplane from stalls involved under the various circumstances of flight, he can be considered pretty safe when it comes to bringing the airplane home in one piece, even though he may have been making some low and slow turns over his girl friend's house or doing flat turns on the final approach to the landing strip.

With but little practice, the average pilot can learn to perform with considerable precision the full sequence of stalls as we have explained them. The ability to perform them is required of all of us and it will be time well spent if we devote the earliest possible flight to mastering of these conditions, particularly if we are planning to display our flying ability to a CAA inspector at some early future date.

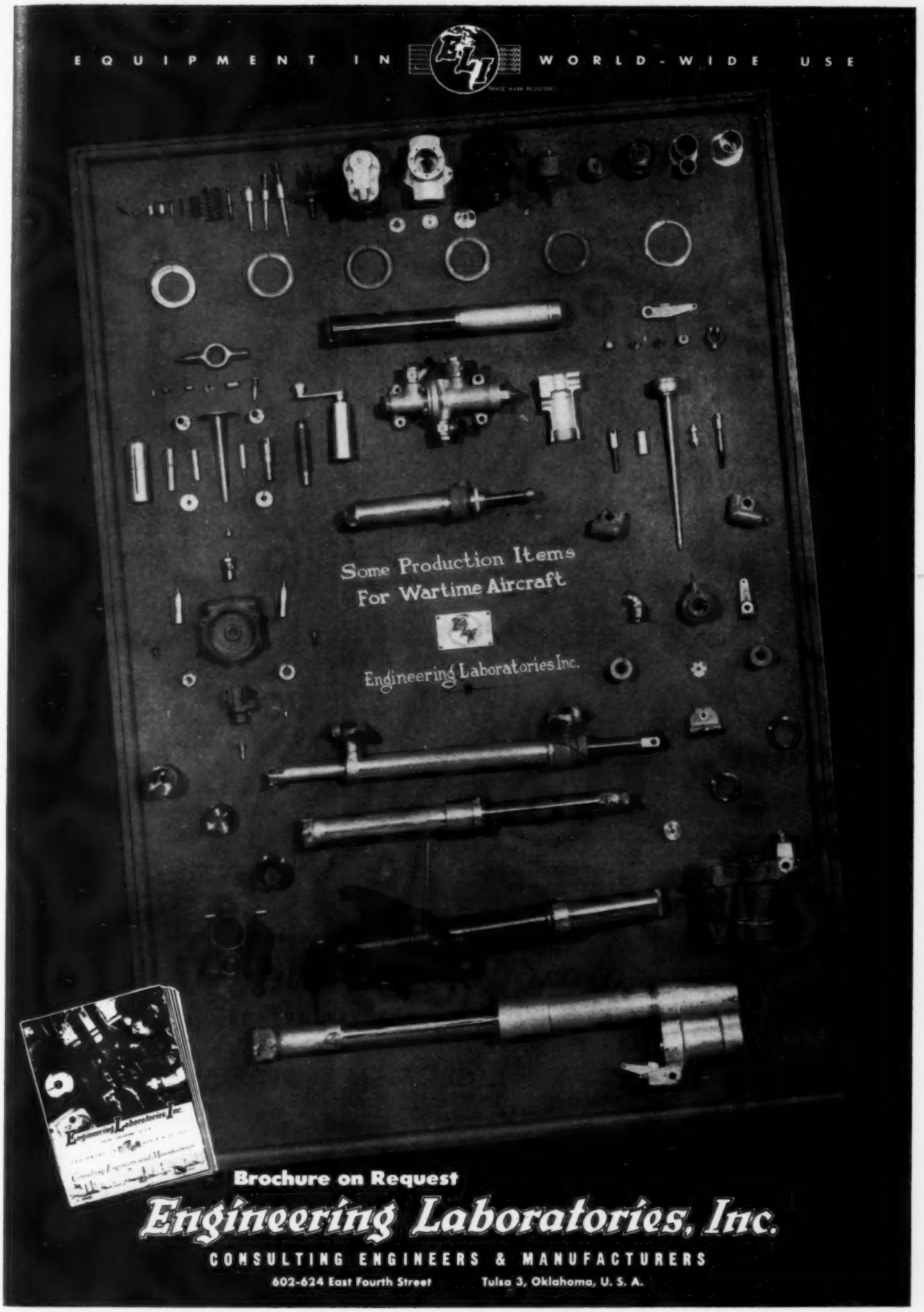
★ ★ ★

10 YEARS AGO in *Southern Flight*

ARTICLES: "Florida Prepares" noted the progress made and planned in Florida's ten-year plan for aviation and airports. Major A. B. McMullen was made state director of aviation, with plans to exploit Florida as a tourist's paradise. Airmarking each city, and expansion of the state-wide system of airports to 197 was planned.

EDITORIALS: A survey conducted by SOUTHERN FLIGHT showed that 1.20 per cent of people interviewed had flight experience, 78.15 per cent expressed a desire to fly and 20.56 per cent had no desire to fly. The result showed a need of a practicable plan for flight instruction for the youth of the country, and the need for practicable financing of aviation projects. . . . The arms embargo act went into effect, barring aircraft and implements of war for export, but steel, cotton and copper were not mentioned in President Roosevelt's proclamation, and the airplane manufacturing industry was faced with another discrimination. . . . The Wilcox Bill, authorizing construction of air bases in strategic places in America and Alaska, passed the Congress, as a step toward modernization of the Air Corps.

BRIEFS: A full page of photos showed a gliding meet sponsored by the Soaring Society of America. . . . The first air mail to be flown across the Pacific began on November 22, with postage rates of 25 cents to Hawaii, 50 cents to Guam and 75 cents to the Philippines being charged. Pan American's "China Clipper" did the job. . . . Largest land plane ever developed for U. S. air transport service was the DST Douglas sleeper plane, a DC-3, just announced. . . . A Navy XP3Y-1 broke the inernational broken-line distance record for seaplanes by flying non-stop 3,300 miles from Coco Solo, C. Z., to San Francisco. . . . Dr. John D. Brock celebrated his sixth anniversary of daily flights, fair weather or foul.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Outline of Defeat of German Air Power

Poor pilot quality, lack of heavy bombers, failure to utilize productive capacity, and fuel shortage led to Luftwaffe collapse.

By TOM ASHLEY

ALLIED air power was decisive in the war in Western Europe. In the air, its victory was complete. At sea, its contribution, combined with naval power, brought an end to the enemy's greatest naval threat—the U-boat; on land, it helped turn the tide overwhelmingly in favor of Allied ground forces. Its power and superiority made possible the success of the invasion. It brought the economy which sustained the enemy's armed forces to virtual collapse, although the full effects of this collapse had not reached the enemy's front lines when they were overrun by Allied forces. It brought home to the German people the full impact of modern war with all its horror and suffering. Its imprint on the German nation will be lasting.

Those words were used to summarize the findings of the United States Strategic Bombing Survey, established by the Secretary of War on November 3, 1944, pursuant to a directive from President Roosevelt, and completed only recently and made public last month. The Survey, which is still studying the effects of strategic bombing on Japan, unearthed many facts and figures dealing with the rise and fall of the German armed forces and Germany's war industry. The German Air Force was the king pin of those enemy forces, and aircraft and air force equipment represented 40 per cent of Germany's war industry. Following is a summary of the official text of the Survey dealing with the defeat of German air power:

2,050 Planes in GAF in 1939

When Germany invaded Poland, her total serviceable aircraft consisted of 1,000 bombers and 1,050 fighters, of which, according to the Luftwaffe's chief of staff, only 160 bombers and 150 fighters were assigned to the Western Front. This total strength was backed by a monthly production of about 500 aircraft of all types.

Emphasis was entirely on fighters and bombers of a type suitable to close co-operation with ground armies—a guide to the strategic concepts of the German high command. Absence of heavy, long-range bomber aircraft indicates that the concept of attack upon the sustaining sources of enemy military strength was not viewed favorably.

With the collapse of France, the days of easy triumph for the GAF were ended in the Battle of Britain. The GAF entered this campaign with a total serviceable strength of 1,100 fighters and 840 bombers, backed by a monthly production of about 500 combat aircraft. During the phase of daylight attacks through September, 1940, the Royal Air Force destroyed or damaged 900 bombers and 1,000 fighters and gained control of the air over the British Isles and surrounding water. The GAF then turned to night attack, during which phase German units lost or damaged totalled 1,475 fighters and 1,850 bombers. Breaking off of the attack cannot be attributed to lack of sufficient German aircraft production. It is probable the decision to attack Russia, apparently arrived at in November-December, 1940, was an important factor. The British fighter force, aided by radar, proved superior, while German bombers proved to be inadequately armed and armored. German fighter tactics were ineffective; the fighter effort was applied piecemeal.

Failure to Utilize Production Cited

German reaction to the GAF's defeat in the Battle of Britain and to numerous disasters during 1942, including Stalingrad, increased RAF attacks on Germany, establishment of the 8th Air Force in Great Britain, turn of the tide of battle at El Alamein and the Allied invasion of North Africa, was curiously apathetic, as far as increased aircraft production was concerned. Acceptances of all types of aircraft were 10,826 for 1940, 11,776 for 1941, 15,566 for 1942. Sixty-five per cent of 1940-41 production were combat types, 75 per cent of 1942 output were combat types. GAF operational losses, including damaged as well as destroyed planes, totalled 3,576 fighters and 3,950 bombers in 1941 and 5,000 fighters and 3,800 bombers in 1942. Meanwhile, combined U. S. and British production of combat types rose from 11,485 in 1940 to 21,564 in 1941 and to 42,300 in 1942. The evidence is that Allied production figures were disbelieved by the German high command.

Occasional Allied air attacks between the summer of 1941 and the spring of 1943 against German aircraft plants were small and resulted in little or no loss in production but, in conjunction with increasing RAF efforts, caused the Germans to inaugurate industry dispersal.

On May 18, 1943, the Combined Chiefs of Staff, approving an 8th Air Force plan, authorized an air offensive against the sustaining sources of German military strength, with first emphasis on German fighter assembly plants in combination with attack on the enemy ball-bearing industry. Combined bomber offensive operations began in July and during the balance of 1943 a total of fourteen attacks, six in July and five in October, were delivered by the 8th Air Force. In addition, the 15th Air Force delivered three attacks against the German aircraft industry in November and December. Between July and December, 1943, about 4,000 tons of bombs were dropped against aircraft factories, which represented about 2 per cent of the total effort during this period.

The 1943 attacks delayed Germany's planned fighter production program by approximately three months and timing of this delay contributed significantly to the victory in critical air battles of the winter of 1944. Another result was adoption by the Germans of new programs for greatly increased production, particularly of fighter types. Additionally, 1943 attacks caused the Germans to intensify industrial dispersal and to place certain critical segments of aircraft production underground. Dispersal in itself caused a loss of production, was accompanied by some loss of efficiency and, when completed, made aircraft production much more dependent on transportation maintenance.

Battle Attrition Worse Than Bomb Losses

In the campaign against the GAF, attrition imposed in battle upon its personnel and equipment assumed proportions of greater significance than production losses in the factories. The number of German single-engine fighters in operational units destroyed or damaged in excess of 10 per cent jumped from 3,650 in 1942 to 10,661 in 1943 and

to 16,150 in 1944. Effectiveness of U. S. long-range fighters—the P-47 beginning in May, 1943 (belly tanks for them in August, 1943), the P-38 with wing tanks beginning in November, 1943, and the long-range P-51 beginning in December, 1943—was a major factor in this attrition. Enemy fighters lost initiative and by March, 1944, day bombers were flying selected routes to force the GAF to fight.

Bad weather and overriding commitments for attacks on V-1 and V-2 sites prevented resumption of attacks on the German aircraft industry until the week of February 20-25, when approximately 4,000 tons of bombs were dropped on aircraft targets, accounting for 90 per cent of the then production. Enemy sources have estimated that 75 per cent of the buildings in these plants were damaged or destroyed in these attacks. However, destruction of vital machine tools in these buildings was not proportionate, and the enemy was able to salvage such tools and resumed production more rapidly than had been anticipated.

The aircraft industry retained top priority of strategic targets until June, 1944; thereafter other target systems succeeded to this position. In point of fact, however, other targets of even higher priority supervened during this period. These were attacks on V-weapon sites and attacks on the French railway system for six weeks immediately prior to the invasion of Normandy. During this period, control of Strategic Air Forces was turned over to Supreme Headquarters, Allied Expeditionary Forces, as part of a plan to concentrate all available effort on the direct support of the invasion. Bomb tonnage dropped on the aircraft industry decreased from 14,173 tons for the second quarter of 1944, to 11,343 tons during the third quarter and to only 2,658 tons during the third quarter.

1943 Attacks More Effective Than 1944 Raids

The 1944 attack on aircraft production, despite its increased weight, was not so effective as the 1943 attack. Despite the fact that a total of 38,220 tons of bombs were dropped in 1944 attacks on the aircraft industry, records indicate the GAF accepted 39,807 aircraft of all types, including 25,860 single-engine fighters, during that year. Yet the GAF during 1944 became progressively less of a threat to either air or ground operation. Only slight aerial resistance was offered to the invasion and the Germans lost control of the air over Germany itself, thereby exposing German industry and transportation to air attacks which were carried to the point of economic collapse. The immediate German reaction to the February, 1944, attacks was consternation, but within a short period most energetic measures for increased production were taken, resulting in increased monthly acceptances of single-engine fighters, which rose from 1,315 for January and 1,016 for February to 2,177 for June, and to 3,031 for September. Later, still more dispersal was achieved, but at great economic expense and with loss of efficiency, disruption of schedules and dilution of management and supervision. In the end it increased the load on the over-burdened transportation system, and when attack was concentrated on transportation, the final assembly plants lacked the necessary subassemblies and components. The policy of dispersal was then revised in favor of concentration underground.

The question that naturally arises is: "Why did the German Air Force suffer defeat in 1944, the year of greatest aircraft production?" The answer depends upon a combination of factors. Although official figures of 1944 acceptances of single-engine fighters totalled 25,860, the German battle order in single-engine fighters only increased from 1,500 on January 1, 1944, to 2,200 on January 1, 1945. Losses of single-engine fighters in front line units during this period totalled approximately 8,500 and a further 8,000 were damaged in excess of 10 per cent. Even assuming that none was repaired, there remains a difference from acceptance figures of some 8,200 aircraft to be accounted for. Estimates of losses in the chain of delivery of aircraft from factories to operational units range as high as 20 per cent. One possible answer is that the acceptance figures were padded to bolster the position of production experts with Hitler.

Pilots Were Greatest Weakness

Deterioration of the quality of German pilots appears to be the most important single cause of the GAF's defeat. By July, 1944, the average AAF training period on operational type aircraft was four to five times that of the GAF, and total training hours were about three times that of the GAF. The average GAF pilot received only about 110 hours of total flying training after July, 1944. As the more experienced pilots were killed or retired from combat, the quality of the GAF declined. Lack of aviation gasoline, begining in 1942, forced reduction in GAF pilot training. By 1944 it also necessitated a GAF policy of standing down for considerable periods to conserve fuel for mass interception of bombers only on selected days. Chief hope of the GAF was to step up production of jet type aircraft using a Diesel-oil base fuel, this to have the dual effect of providing superior fighter planes while freeing them from dependence on aviation fuel from hydrogenation plants.

There is considerable German opinion that an attack against aircraft engine plants would have had more far-reaching results than attack on airframes. Attacks on the engine industry were only commenced on an important scale in February-March, 1944, and reached their peak in July, 1944. Production of engines dropped from a maximum of 6,000 reached in April, 1944, to 2,700 in October, from which there was a recovery to a total of about 4,200 by the end of the year. From May, 1944, requirements consistently exceeded production. Whereas a surplus of some 10,000 engines of principal types had been built up by the beginning of 1944, the figure had fallen to less than 1,000 by September, 1944. It is difficult to determine whether an attack on aircraft engines would have been preferable to that delivered against airframes.

Special emphasis was placed on development and production of jet fighters during 1944 and 1945. Development of jet engines had been initiated in 1938-39. The Me-262, a twin-engine fighter and best aircraft of its type, was first flown on July 18, 1942. Production was approved on June 5, 1943. First models were accepted by the GAF in March, 1944, and during that year 527 were accepted—up to May 8, 1945, this figure was increased to about 1,400. Only a few became operational because of mechanical difficulties; even those were relatively ineffective because of poorly trained pilots. Messerschmitt officials claim volume production could have been achieved in 1943 had they been given full support, but it appears likely that troubles with the power unit were the true cause of delay. The entire project was much hindered by Hitler's insistence that the jet be used as a fighter-bomber.

Conclusion

In conclusion, the following are the salient facts in respect to German aircraft production and the defeat of the German Air Force: (1) The GAF was originally designed for direct support of ground operations, and lack of long-range bomber force proved a grave strategic error; (2) due to overconfidence, no attempt was made to utilize the full capacity of the German aircraft industry until after initiation of the combined bomber offensive of 1943; (3) attacks on the German airframe production in 1943 and in February, 1944, contributed significantly to winning air supremacy in critical air battles of early 1944; (4) an over-all shortage of aviation gasoline resulted in curtailment of flying training as early as 1942 and this decision was reflected in deterioration of quality of personnel, which was the principal cause of the defeat of the German Air Force; (5) the GAF lost control of the air in the early months of 1944 and never regained it; (6) air attack on German petroleum industry in the summer of 1944 prevented revival of a GAF utilizing conventional-type aircraft—hence the increase in production of such aircraft which took place after D-Day was of little military significance; (7) thereafter, creation of a small force of jet aircraft manned by qualified personnel and operating on low-grade fuels was the only method left to combat the Allied air offensive, but development of this force was not achieved in time to be a serious threat. ★ ★ ★

NACA's INDUSTRY CONSULTING COMMITTEE met recently with the National Advisory Committee for Aeronautics at Cleveland. Around the table, left to right: Beverly Howard, Hawthorne School of Aeronautics; Vannevar Bush, NACA; William A. M. Burden, NACA; Dr. J. C. Hunsaker, NACA; L. D. Bell, Bell Aircraft Corporation; William Littlewood, NACA; Adm. L. B. Richardson, NACA; George W. Lewis, NACA; T. P. Wright, NACA; Gen. B. W. Chidlaw, AAF; J. H. Kindelberger, NAA; C. B. Monro, PCA; R. E. Gross, Lockheed Aircraft; Jack Frye, TWA; H. M. Horner, United Aircraft; W. T. Piper, Piper Aircraft. Background, left to right: T. L. K. Smull, NACA; E. R. Sharp, NACA; Col. D. N. Putt, AAF; Capt. Robert S. Hatcher, Navy Bureau of Aeronautics; Grover Loening, NACA; J. F. Victory, NACA; Col. Paul H. Kemmer, AAF.

New Firm to Build 300 Fairchild F-24's in Dallas NAA Plant

Contracts to build 300 Fairchild F-24 four-place personal airplanes and to furnish a major part of the subcontracting work on the Fairchild C-82 Packet program have been obtained by the Texas Engineering & Manufacturing Co., Ltd., a new concern which has negotiated a lease with the RFC to operate a 350,000-sq. ft. portion of the plant at Dallas formerly used by North American Aviation, Inc., to manufacture P-51, AT-6, C-82 and B-24 airplanes during the war.

Organized by Robert McCulloch and H. L. Howard, former Dallas division manager and comptroller, respectively, of NAA, the firm began jig work and tool work for the new projects on November 1, and expects to have 400 persons working by January 1, with a full working force of 3,000 persons eventually. North American vacated the "A" plant of the government-owned Dallas factory recently and will finish the last of three C-82 Packets by November 15 in the factory's larger "B" plant. The new company is operating a large portion of the "A" plant, including the foundry, part of the drop hammer equipment, and steel and dural heat treating facilities, with 20 per cent of the plant's machinery being leased from the government along with the building space.

Existing conveyor systems, formerly used for P-51 and AT-6 production, will be utilized in manufacturing the four-place Fairchild F-24, although it is of steel tubing and fabric construction. Commercial metal work is planned in addition to aircraft, and McCulloch said many inquiries had been received from large merchandising companies seeking to subcontract for sheet metal work.

Seventy C-54's To Be Converted by Republic

Republic Aviation Corporation has contracted to convert twenty C-54 military transports into airliners for Pan American World Airways. American Airlines had previously awarded Republic a contract to convert fifty C-54's. Republic has expanded its Farmingdale, Long Island, modification lines and plans to complete seventy conversions by May.

British Industry Sends "Ambassador" to Latin American Air Operators

Great Britain's first "trade ambassador," M. T. W. Ballantyne, has taken up duties in Rio de Janeiro and will represent the export section of the Society of British Aircraft Constructors.

British manufacturers will retain their own salesmen and agents in Latin-America but Ballantyne will "further the interest and well-being of the British aircraft industry and act as a channel of information between British industry and Latin American aircraft operators."

Peacetime Output of 3,000 or More Military Planes Yearly Urged to Maintain U. S. Industrial Preparedness

A peacetime procurement program calling for annual production of 3,000 or more military airplanes with an airframe weight of at least 30,000,000 pounds was urged in an extensive program presented at a Senate Surplus Property Subcommittee by Dr. George P. Baker, alternate member of the Air Co-ordinating Committee. Such a procurement program, Dr. Baker said, is the very minimum necessary to maintain the reservoir of engineering, tooling, and production skills which are indispensable for rapid acceleration of output in case of national emergency.

Other points stressed were:

1. The Army and Navy must not stop with experimental versions of the latest and most effective weapons of war. Instead, such weapons must be thoroughly engineered and tested and actually ready for large-scale production if necessary.

2. To assist the aircraft industry for national defense purposes the government should make it a policy to make surplus aircraft plants available on favorable terms.

3. A major portion of aircraft production dispersion achieved during the war should be preserved. Dispersion can be achieved at cost of $15,000,000 to $20,000,000.

4. The Army and Navy must make comprehensive preparations to meet a realistic mobilization schedule. This industrial mobilization planning should be started at once and appropriations should be specifically earmarked for this purpose. Initially, $5,000,000 a year would enable the Army and Navy to organize their efforts for an aircraft expansion program and secure the necessary detailed plans for industry. In subsequent years, the cost might run somewhat above or below the $10,000,000 level.

5. The War and Navy Departments should own specialized airframe and engine plants with aggregate floor space of at least 26,000,000 square feet. These plants should be ready for immediate conversion to aircraft production. Space not needed for peacetime aircraft production should be leased to industry in general.

6. The War and Navy Department should maintain a reserve of 64,000 general purpose machine tools stored in reserve plants.

7. To make this program effective, the U. S. should maintain a highly efficient intelligence service to give the nation adequate warning before attack by an aggressor. In the event of such warning, industry must be ready to mobilize and an over-all program must be ready to provide abundant raw materials to meet all requirements.

Interesting recommendations were made to further clarify the proposed above program. For example, in urging that industry keep ready for quick mobilization, the Committee pointed out "industrial expansion maneuvers" would be invaluable to test mobilization organization, maintain proficiency in direction and supervision, and call attention to needed revisions. "Because of the heavy reliance of the Armed Forces on American industry," the Committee stressed, "industrial 'maneuvers' have become as essential as the familiar air, sea, and ground application of tactics to typical situations."

Also, to fill the need for reserve plants quickly adaptable to airframe and engine production, it was announced 16 plants have been selected for retention in the joint Army Air Forces-Navy Bureau of Aeronautics reserve as follows: War department owned airframe plants — Fort Worth, Kansas City, Marietta, Omaha, Tulsa; Defense Plant Corporation owned plants — Columbus, Dallas, Louisville, St. Louis, Wichita; War department owned engine plants—Chicago, Ill.; Indianapolis, Ind.; Kansas City, Kansas; Lockland, Ohio; Melrose Park, Illinois; South Bend, Indiana.

It was proposed that title to the DPC plants be acquired and retained by the War or Navy Departments, and that leases contain restrictive clauses to prevent private industry from altering plant structural suitability for airframe and aircraft engine production. Any space not required by peacetime industry would be maintained by the War or Navy departments.

Ward Visions Atomic-Powered Aircraft

Atomic-powered aircraft with virtually unlimited range was forecast recently by J. Carlton Ward, Jr., president of Fairchild Engine and Airplane Corp. While speaking before a special Senate subcommittee on light metal aircraft in the interests of national defense, Ward said atomic energy will eliminate the heavy fuel loads carried by present day aircraft. Ward said there was justification for expenditures in experimenting with atomic power for airplane motive energy, commenting, "I think our nation cannot do otherwise."

2,929 Planes Ordered by AAF for 1946 Delivery

The Army Air Forces has contracted for 2,929 aircraft of all types for the coming year, General H. H. Arnold revealed in recent testimony. The AAF will spend $395,190,000 for aircraft with $2,400,000 of this sum allotted for controlled missiles.

Estimated deliveries for 1946: 2,341 fighters, 913 transports, 890 very heavy bombers, 267 light bombers, 172 medium bombers, 172 trainers, 46 communications aircraft, 37 reconnaisance.

Hollow Steel Replaces Aluminum in Large Props

A new hollow-steel propeller blade, for propellers over 13 feet in diameter, has been developed by Hamilton Standard Propellers, division of United Aircraft Corporation. The blade has undergone Army and Navy tests, and models are used on at least six experimental warplanes now under development. The company decided to discontinue using duraluminum as a weight saver in its larger blades as the weight advantage was lost as the propellers became larger. However, the use of duraluminum is still effective in propellers less than 13 feet in diameter.

High Speed Designs Overtax NACA Facilities

The aviation industry needs five times the capacity of the Government's high speed wind tunnels, the National Advisory Committee for Aeronautics disclosed recently. Companies working on supersonic planes hope to fix designs for manufacture within the next six months, the Committee pointed out. The Committee turned back $2,000,000 of its current appropriation but informed Congress it needs the remaining $24,000,000 to meet civil industry's unprecedented demand for research.

Secrecy Lifted From 300 NACA Reports

More than 300 National Advisory Committee for Aeronautics technical reports, restricted during the war, have now been declassified and available for public use, according to Dr. G. W. Lewis, director of aeronautic research for the NACA. The papers include reports and results of aeronautical research conducted in the NACA laboratories, or under the committee's sponsorship. Additional publications on research work during the war will be available as soon as they are put into final shape.

British War Output Placed at 125,000 Planes

Total production of airplanes by British aircraft industry from September, 1939, until the end of the war was 125,000, according to the Society of British Aircraft Constructors. Production averaged 730 planes per month the first four months of the war, and averaged 2,435 planes per month in 1944. At the peak period in 1944, employment in the aircraft industry neared the 2,000,000 mark. Production of heavy bombers, nil in 1939, made up only 0.27 per cent of the 1940 total, and in 1944 accounted for only 9.7 per cent of the total. Production of spare parts and components was estimated to have equalled 62,500 airplanes.

New Fairchild Trainer Studied by Navy Men

Navy engineers spent five days at the Fairchild Engine and Airplane Corporation last month studying the mock-up of a new Navy trainer. The plane is a low-wing, all-metal monoplane with a radial engine and console type cockpit. Army officers from the AAF engineering school at Wright Field studied the C-82 Packet. Three representatives of the Army's airborne division visited Fairchild to discuss the C-82's future use in airborne operations.

Curtiss Propeller Work Centered at Caldwell

Curtiss-Wright Corporation, propeller division, is planning to consolidate the manufacturing facilities of the Clifton, N. J., plant with those at Caldwell, N. J. The Clifton plant started in operation in 1938.

Aeroprops for Rainbow

Republic Rainbows, new 400 mph. transports which have been ordered by Pan-American World Airways, are to use Aeroproducts propellers, built at Dayton at the Aeroproducts division of General Motors Corp.

Willey Directs Martin Company's Peacetime Plan

The Glenn L. Martin Company has announced a new vice presidency, responsible for planning-material, in order to meet peacetime demands for more efficient production and to reduce overhead. G. T. Willey, formerly a vice president and general manager of the Martin-Nebraska company, has been named head of the new department, and will be responsible for planning-material, procurement and quality control. J. P. Bailey is to be in charge of the quality control department, responsible for inspection; F. O. Muller, the procurement department, and R. L. Evans, the planning and material control department. The revised organization and functions is expected to lead to more efficient production and will cut down overhead.

All through the war INTERNATIONAL PARACHUTE FLARES proved an important factor in making safe night landings. For many years, INTERNATIONAL FLARES have been supplied to meet all C.A.A. requirements for both miscellaneous and scheduled operations. Now with greatly enlarged facilities for quantity production, INTERNATIONAL is prepared to meet the increased demand that is bound to come for this vitally important and necessary safety equipment. Available in 3-Minute, 1½-Minute and 1-Minute types, in brackets of one or more, equipped with electrical switches, ready for installation. Carried in stock by leading Aircraft Supply Houses.
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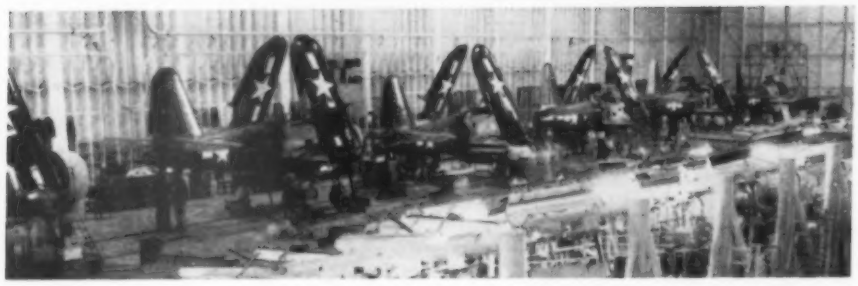

JET-PUSHED PROPELLER-PULLED "FIREBALL" FIGHTERS for the Navy are shown here on the final assembly line at the Ryan Aeronautical Company plant in San Diego, where quantity production is continuing.

—(Ryan photo.)

Allison Acquires Two Aluminum Foundries

The aluminum foundries at Bedford, Indiana, and Antioch, Ohio, have been acquired by Allison division, General Motors Corporation, for the production of high-grade aluminum castings for industrial uses. Primary uses of the foundries are to make castings techniques and processes developed during the war for liquid-cooled aircraft engines available to industry. The Bedford foundry has supplied 14,000,000 pounds of cylinder heads for liquid-cooled aircraft since it began operations in 1943. The Antioch foundry is to be used by Allison for a research unit and for specialized methods of making precision castings.

Douglas Seeks Engineers

Douglas Aircraft Company needs more aircraft engineers to help design planes. With Army and Navy contracts canceled, the company is able to go into making its backlog of civilian planes. The company especially needs draughtsmen, designers, aerodynamicists, stress analysts, air-conditioning and cabin supercharging designers, power plant installation and research engineers. Both amateur and experienced engineers are needed.

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In rallies, interdepartmental contests, and solicitations, promote the new Franklin Delano Roosevelt Memorial $200 Bond! Better than "cash in hand," Victory Bonds enable buyers to build for the future!

Keep on giving YOUR MOST to the Victory Loan! All Bond payroll deductions during November and December will be credited to your quota. Every Victory Bond is a "Thank You" to our battle-weary men! Get behind the Victory Loan to promote peacetime prosperity for our returning veterans, your nation, your employees—and your own industry!

The Treasury Department acknowledges with appreciation the publication of this message by

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Curtiss Given Navy Order for Seahawks

The SC-2 Seahawk scout plane is scheduled to go into production the early part of 1946 at the Columbus, Ohio, plant of Curtiss-Wright Corporation, according to a company spokesman. Orders for the planes have already been received from the Navy Bureau of Aeronautics.

546,202 Hamilton Standard Propellers Made During War

From September, 1939, until the end of the war, Hamilton Standard and its plants had produced 242,105 propellers and 875,796 blades. The company's four licensees from 1941 to 1945 assembled 304,097 propellers and manufactured 1,101,397 blades. Together, the totals for Hamilton Standard and its subsidiaries for the duration of the war are 546,202 propellers and 1,977,193 blades.

In September, 1939, Hamilton Standard was producing propellers at the rate of 395 a month with 164,368 square feet of floor space. Production climbed during the first war months with orders from England and France. Comparative peak figures show that in 1944, 817,460 square feet of productive floor space with 8,619 productive employes. Peak year for production was 1943, with 65,143 propellers and 241,184 blades produced in three plants.

General Electric Uses B-24 as Flying Lab

A surplus B-24 has been converted into a flying laboratory for General Electric Company's new flight test division. The plane arrived last month at the Schenectady, N. Y., County Airport, to be placed in a new concrete hangar that is being constructed at the site. Other airplanes will be used with the B-24 to test radar, aircraft instruments, aerial communication systems and electronic aircraft equipment for both military and civilian use.

W. L. Wilson Heads AIA Advisory Group

William L. Wilson, vice president of Kellett Aircraft Corporation, has been elected new chairman of the eastern region of the public relations advisory committee of the Aircraft Industries Association. Joseph E. Lowes, Jr., public relations director for Fairchild Engine and Airplane Corporation, was elected vice chairman of the committee. Wilson succeeds Jess W. Sweetser.

Fairchild Aerial Surveys Cited for War Mapping

The U. S. Army Map Service has presented an award to Fairchild Aerial Surveys, Inc., for its production of maps for the armed forces. Operations were prepared from maps, and 90 per cent of all Army and Navy intelligence came from aerial photographs. The citation singled out the production of photos for use in an Army operation in the Pacific in record time.

Adams to Represent Fairchild on Coast

Alvin P. Adams & Associates has been appointed West Coast representative of the Fairchild Engine & Airplane Corporation. Mr. Adams was formerly vice president and a director of Fairchild. Associated with him are William C. Rockefeller, aeronautical engineer and consultant; A. A. Boon Hartsinck, formerly associated with U. S. offices of the Royal Dutch airlines, and Moschelle Howard, formerly of Consolidated Vultee Aircraft Corporation.

Watch..

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RAYMOND W. YOUNG, chief engineer of Wright Aeronautical Corporation since 1940, has been appointed vice president in charge of engineering. . . . COL. AL BODIE, recently returned to inactive status, has been named vice president and works manager of the Otto K. Olesen Company, Hollywood. . . . WILLARD (BILL) LANDERS, formerly general superintendent of North American Aviation, Texas division, has been appointed head of the production department of Fairchild Aircraft division, Fairchild Engine and Airplane Corp. . . . H. H. CARTWRIGHT, formerly a colonel in the Army, has been named assistant to Alfred Marchev, president of Republic Aviation Corporation.

TED NING, formerly senior engineer with American Airlines, and JERRY MARTIN, former air transportation instructor at the University of Texas, have joined Fairchild Aircraft division to assist in sales promotion of the C-82 Packet. . . . LOU R. CRANDALL, president of the George A. Fuller Company, has been elected to the board of directors of Curtiss-Wright Corporation. . . . W. G. LUNDQUIST, who is directing development of an aircraft gas turbine engine for Wright Aeronautical Corporation, was named chief engineer for the corporation. . . . LEE BISHOP, test pilot for Douglas Aircraft Company, has joined the staff of Alvin P. Adams Associates. . . . ROBERT H. BIRON, JR., has been named vice president in charge of industrial relations at Northrop Aircraft, Inc., and ROLAND J. PAGEN was elected company treasurer. CLAUDE N. MONSON, formerly treasurer and a vice president of Northrop, is to continue as vice president in charge of finance; THEODORE C. COLEMAN has resigned as vice president of Northrop, but is to continue as a director of the company.

LEONARD C. PESKIN has been named vice president in charge of contracts of Kellett Aircraft Corporation. . . . CHARLES O. CARY, former executive assistant to L. Welch Pogue, chairman of the Civil Aeronautics Board, has been appointed special assistant to the Board, and MISS MARIAN L. NEWMAN, former secretary to the Chairman, succeeds Mr. Cary as executive assistant to the Chairman. . . . COL. GEORGE H. MORIARTY has been appointed chief of the aircraft components disposal section, aircraft division, Reconstruction Finance Corporation. . . . DR. FRANCIS C. FRARY, director of research of Aluminum Company of America, has been elected to receive the Perkin Medal for his accomplishments in the field of industrial research.

A. E. WELCH, formerly vice president and treasurer of Aireon Manufacturing Corporation, has been appointed executive vice president and treasurer of the corporation. . . . W. A. BRATFISCH, former sales manager in the Dallas district for B. F. Goodrich Company, is transferred to the new aeronautical products department with headquarters in Akron. . . . J. LEDERER, chief engineer, Aero Insurance Underwriters, has been appointed aeronautical engineering consultant to the aviation section, New York Board of Trade. . . . JAMES L. STRAIGHT, formerly in charge of committee co-ordination for the Aircraft War Production Council, is now western division executive director of National Patent Council. . . . JAMES FRANCIS REILLY, formerly member of the public utilities commission of the District of Columbia, is now in law practice at 726 Jackson Place, N. W., Washington, D. C. . . . LEO R. GILLERAN, formerly with Boeing Airplane Company, has joined Transcontinental and Western Air, Inc., as assistant to the treasurer.

WILLIAM F. PETERS, former manager of the Aircraft War Production Council, Inc., has been appointed resident attorney for the Menasco Manufacturing Company. . . . SCOTT GILBERT, technical illustrator, has joined McLaughlin-Carr Associates. . . . MARSHALL B. TAFT, formerly of the aero division, Minneapolis-Honeywell Regulator Company, has been made assistant to the president of the Brown Instrument Company. . . . H. Y. SATTERLEE, former assistant sales manager for Edo Aircraft Corp., has been appointed sales manager for Pacific Engineering Corporation. . . . R. RANDALL IRWIN, industrial relations service director, Aircraft Industries Association, has been named substitute Industry member of the National War Labor Board. . . . LAWRENCE A. EISINGER has been appointed crafts and science editor of *Mechanix Illustrated Magazine*. . . . CYRIL C. THOMPSON has resigned as vice president of United Air Lines and has been elected executive vice president of American Aviation Associates, Inc.

ELMER LEHMKUHL, formerly with Propellair, has been appointed sales manager of Dynamic Air Engineering, Inc., Los Angeles. . . . . ERNEST T. GAMACHE, formerly with Simmonds Aerocessories, Inc., has opened a new personal service agency in partnership with MARGARET BRAUN, formerly personnel director for Simmonds. . . . WALTER P. MARGULIES, director of interior design for J. Gordon Lippincott & Co., has become a partner in the firm. Margulies was interior designer for the Republic Seabee amphibian. . . . CARL H. LANGENDORF, formerly assistant office manager of McDonnell Aircraft Co., has been named sales and service engineer for the St. Louis territory of Surface Combustion Corporation, and LEO B. McCOY has been appointed sales representative in the New Jersey territory for the corporation. . . . HAROLD J. McKAY has been appointed service engineer in the New York territory for Janitrol, Surface Combustion Corporation.

LT. COL. SELBY CALKINS, Air Crops, has joined the Henry Publishing Company, publishers of *Skyways* and *Airways Traveler* magazines, as western editor, directing company activities in eleven western states. Calkins was managing editor of *Western Flying* magazine before entering the armed forces.

Wright Named Vice Chairman of NACA

T. P. Wright, administrator of the Civil Aeronautics Administration, was elected vice chairman of the National Advisory Committee for Aeronautics, and Dr. J. C. Hunsaker was re-elected chairman. Doctor Hunsaker was also elected chairman of the executive committee, and Francis W. Reichelderfer, chief of the U. S. weather bureau, was elected vice chairman.

Hill & Knowlton Opens Dallas Office

W. W. "Bill" Sherrill has been named head of the newly established southwestern office of Hill & Knowlton, nationally known public relations firm. The new office is located in Dallas, Texas. Sherrill was formerly Hill & Knowlton representative as director of public relations of Consolidated Vultee Aircraft Corporation plant in Fort Worth. James C. Fuller, former public relations director for Stinson division of Consolidated Vultee Aircraft Corporation in Wayne, Michigan, has joined the Dallas office of Hill & Knowlton. Fuller is assigned account executive for the Luscombe Airplane Corporation of Dallas and Trenton, N. J.

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NEW PRODUCTS

New Type Torque Wrenches

Two new torque wrenches are being manufactured by the JO Manufacturing Company, South Gate, California. They were made for lighter precision assembly on aircraft and are suited for manufacturers during reconversion to the production of home appliances. One wrench is ratchet type, constructed of solid aluminum. It is pre-set at the factory to any torque within a range of 5 to 40 in./lbs., and may be reset in plant tool room. The second wrench is like the first, and is particularly adaptable to close assembly work. Both release when the predetermined torque is reached.

Low Voltage Transceiver

The United Cinephone Corporation plant, Torrington, Conn., is producing a new low voltage transceiver with a compact self-contained radio voice receiving-transmitting communication unit. The unit is useful for short-range voice communications. It operates on a crystal controlled fixed frequency within the four to seven megacycle band. It is made of aluminum and weighs ten pounds. The unit is named BRT-5, and two of the units will work over a range of five miles under average conditions.

Lightweight Drill Guide

A new design and a change to aluminum construction has been announced by Products Engineering Company of their drill guide pressure foot, making it much lighter and easier to use. It is used with hand motors in jig template drilling. The construction allows the use of standard size tips, which can be quickly interchanged to provide various size drills.

Hydraulic Die Casting Machine

One of the world's largest high pressure die casting machines has been manufactured by the Hydraulic Press Manufacturing Company. The machine is designed to cast 14.88 pounds of aluminum alloy per "shot" at an injection of 25,000 psi. The advantages in the all-hydraulic die casting machine are the ability to produce interchangeable, high quality parts at a very high hourly rate, and to shape them so as to reduce finishing operations.

Plastic Dip for Small Parts

Small machine parts dipped in plastic offers protection from corrosion and rust. The parts may be tied by a length of fiberglass cord to a conveyor chain which carries them through the plastic dip. Or they may be dipped singly, by hand. When cooled, a tough, transparent, one-tenth inch, flexible skin is formed that can be peeled off when the part is to be used. A dip, known as Eronel Thermodip, is made by Dade Brothers, Inc., Mineola, N. Y., and Los Angeles.

Air-driven Speed Saw

A compressed air-driven speed saw and filing tool is now being manufactured and distributed by the Air-Speed Tool Company, Los Angeles. It is designed to simplify and hasten most sawing and filing operations and can be operated in awkward or cramped quarters and from difficult positions. No gears, adaptors or power take-off devices are used in the air-speed saw.

Plastic Lining for Gas Trucks

Industrial Lining Engineers, Edgeworth, Pa., have lined a gasoline truck tank with a plastic coating to prevent corrosion of carriers caused by water in gasoline, as an experiment. Water condensation in tanks is particularly disastrous in the case of aviation gasoline, as rust particles could stop the whole fuel system. The company says that the new plastic lining will withstand corrosive action in gasoline.

Improved Type Explosive Rivet

To meet mass production demands, E. I. du Pont de Nemours & Co. has developed an improved explosive type of "blind" rivet used by the aircraft industry during war production. The new type keeps the basic features of previous designs and eliminates the necessity for close tolerance drilling and provides rivets which will accommodate a wide range of metal thicknesses. These features are in direct contrast to the explosive rivets supplied the aircraft manufacturers where precision tolerances and a wide variety of lengths were required. The rivets are placed in position and one person applies heat to the head, exploding it and it expands to fill the hole.

Compound for Gaskets, Pipes

Bowser, Inc., Fort Wayne 2, Indiana, is manufacturing a pipe sealing compound and gasket cement under the trade name of "Black Magic". The company claims that the substance does not become brittle with age, and that it could be used for gasoline, oils, water, steam and a large variety of liquids, except those with alcohol. The cement clings to metal effectively. It comes in various sizes from a 4-ounce tube to a 50-gallon drum.

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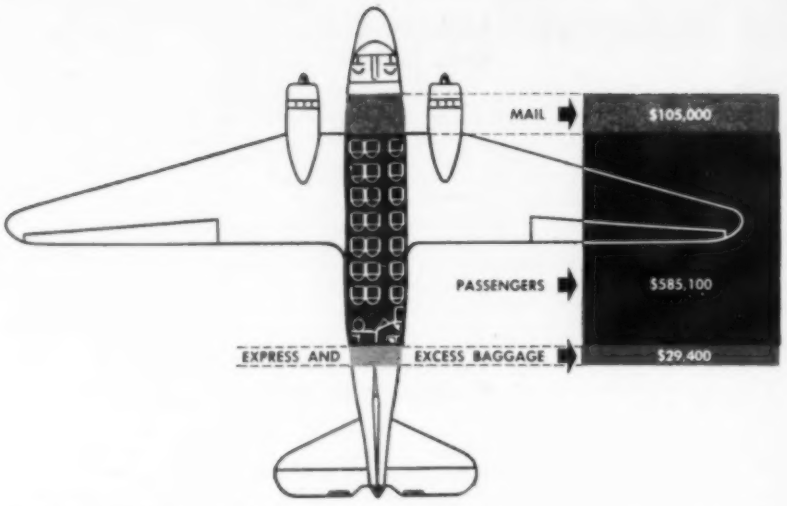
AIR TRANSPORT

Airlines Swamped by Travelers Despite Inept Treatment of Customers

By E. H. PICKERING

Abandonment of priorities last month was marked by a sudden civilian demand for air travel space which the airlines were not prepared to handle. Within ten days American Airlines in Washington received 21,000 calls for space above the normal demand for reservations. The increase recorded by American's Chicago office was 29 per cent, and it reported a 31 per cent increase in calls to West Coast and Texas offices. Delta Air Lines' Dallas-Fort Worth reservations department received 50 per cent more calls than usual.

War difficulties were generally blamed for the equipment shortage. However, one airline last month considered refusing a DC-3 allocated to it from government surplus. Personnel shortages contributed to the situation, and rapidly-expanded airline personnel has included too many inept employes who mishandle the customers. Officials who made quite a success out of treating airline patrons as individuals are now wondering whether today's personnel will ever overcome inefficiencies developed from handling "too many customers." Some examples of what patrons put up with to ride the airlines include: Waiting indefinitely after reservation clerks answer the telephone with "One moment, please," and then mysteriously disappear; airline refusal to list space requests for more than two future flights, forcing the early customer to the bottom of succeeding lists; cancelling non-stop space at take-off time for "extra gas" which was somehow overlooked when all 21 seats were originally booked.



ANNUAL REVENUE EARNED BY EACH DC-3 operated by Delta Air Lines is $719,500—as ingeniously shown in this diagram from Delta's graphically illustrated annual report to stockholders. Similar picture charts cover manpower, salaries, and gross revenues in an easily understood manner.

The airlines will have their opportunity to return to higher standards of passenger handling shortly after the first of the year when converted C-54's will be introduced to commercial service. In some cases seat capacity will be doubled, and supply will nearly balance with demand. If courtesy, fairness and willingness to serve can be developed from topmost airline executives to baggage handlers, more transports will be needed, and three-cent fares, as advocated in a sound article by Chairman C. R. Smith of American in the *Saturday Evening Post*, will have a good chance of materializing. Judging from the writer's experiences on four airline trips during the last thirty days, much remains to be done to improve airline service.

Traffic Booming

Latest company figures emphasize impressive recent gains in business. During September, Delta Air Lines showed a 66 per cent increase over passenger traffic for September, 1944, with priority travelers representing less than 10 per cent of all passengers. Western Air Lines business during September soared to the highest peak in the company's twenty-year history. Revenue passenger miles increased 68.43 per cent as compared to the same month a year ago; express pounds carried increased 56.62 per cent over September, 1944. United Air Lines flew 58,569,800 revenue passenger miles during September for a 35 per cent gain over the same previous period. Colonial Airlines, Inc. increased passenger traffic between New York and Montreal by 61 per cent, as compared with September, 1944. Colonial carried 10,185 passengers during the first month of peace, as compared to 6,295 in September, 1944. And, in Canada, Trans-Canada Air Lines broke all previous records during August when 10,585,563 passenger miles were flown. International air express shipments handled in September scored an 18.8 per cent gain over the same month 1944, with a reported total of 24,714 shipments.

Route Expansion

Airline networks were expanded 4,034 miles during the first three quarters of 1945, sending the total number of authorized airline route miles to an all time high of 66,971 miles.

The largest single new extension in the history of the Civil Aeronautics Board was made when Delta Air Lines received a certificate to add 1,224 miles to its system, both North and South. From Cincinnati, Delta was authorized to serve Chicago via Anderson, Muncie, and Newcastle. From Knoxville, it was authorized to serve Asheville and Greenville-Spartanburg. From there, one branch will go to Columbia and Charleston, South Carolina, while another branch will go to Augusta, Savannah, Brunswick, Jacksonville, and Miami.

American Airlines received a net addition of 653 miles as a result of reshuffling three northeastern routes. Mid-Continent Airlines gained 584 miles. Eastern Air Lines gained 693 miles and Colonial Airlines was given a 715-mile addition to its system by a combination of route extensions. Pennsylvania-Central Airlines gained 46 miles and a link between Rochester, N. Y., and Washington, D. C., with a new route that will tie in Williamsport, Elmira-Corning, Rochester, and Buffalo.

Briefs

The Civil Aeronautics Board authorized Northeast Airlines to consolidate its routes, 27, 65 and 70 into one route to be designated as Route 27. As a result, Northeast is in a position to provide service from Portland, Bangor, and Augusta, and points on its route north of Boston, directly to New York without the necessity of a stop at Boston on all flights.

On December 1, domestic airlines will inaugurate a new ticket-selling plan that allows travel agents to sell air transportation. This innovation is expected to add 1,000 new sales outlets since it almost triples the 573 airline ticket offices. Officials of the Air Transport Association expect the number of sales outlets will increase to 2,000 by June.

Braniff Airways will inaugurate airfreight service on all routes December 1 in accordance with CAB tariffs. This airfreight program, Braniff claims, is the first to be put into operation by an airline without mileage restriction. Rates will range from thirty to forty-five cents per ton mile.

B-H AIRCRAFT CO., Inc.
27-01 Bridge Plaza, N., Long Island City 1, N.Y.

DANDY SIXTEEN-PIECE UNIVERSAL MIDGET TOOL SET: Midget Pliers, Diagonal Cutters, Four Midget End Wrenches, Needle-nose Pliers, Screwholder, Six Punches and Chisel, Round File, Midget Crescent Wrench. $14.85. Remit Today. Catalogue Free with Order.
UNIVERSAL TOOL COMPANY
1527 Grand, SF, Kansas City 8, Mo.

Pesco MOTOR DRIVEN HYDRAULIC PUMPS

PESCO Motor Driven Feathering Pump
Capacities: 4 g.p.m.—400 p.s.i.; 3 g.p.m.—1000 p.s.i. Pressure limit: 1000 p.s.i. for two minutes at 15-minute intervals. Weight: 14.4 lbs. Motor: 24-volt d.c., 3-1/2 h.p.

Proved by tens of thousands of hours of the toughest kind of war flying, PESCO Feathering Pumps have set a record for performance and dependability that is unequaled. The newest model (illustrated above) has been developed by PESCO craftsmen to provide a compact, auxiliary hydraulic pump unit for propeller feathering that responds by remote control, with split-second readiness, to the pilot's wishes.

This pump is typical of the many motor driven hydraulic pumps that PESCO has developed for auxiliary operation of aircraft parts. All of them feature *Pressure Loading*, an exclusive PESCO development that compensates for wear and the thermal variations brought about by the wide range of altitudes and temperatures through which these pumps must operate. *Pressure Loading* automatically maintains minimum clearance between pump gears and gear housing, making possible continuous high operating efficiencies under all conditions.

Write for descriptive folders on Motor Driven Hydraulic Pumps to PESCO Products Co. (Division Borg-Warner), 11610 Euclid Avenue, Cleveland 6, Ohio.

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In Precision Hydraulics, Fuel Pumps,
Air Pumps, Related Accessories . . .
PERFORMANCE POINTS TO *Pesco* FIRST

CAA Advisory Group Opposes Economic Regulations; Asks Mechanics Be Allowed to Certify Repair Work

Elimination of practically every regulation proposed under Part 42 of the CAR was recommended by the CAA's non-scheduled advisory committee at Denver, October 17. In making this move, the committee reasserted its previous stand that "senseless regulations" must be removed from private flying. No economic regulations of any kind should be imposed on any type of non-scheduled flying for a period of at least two years, the committee urged.

The committee also recommended that the present inspector-mechanic system be simplified to the point that qualified mechanics be designated to certify planes as airworthy after they have made repairs. This system would parallel the broadened flight examiner set-up.

Members of the group agreed two types of radio would be necessary for private aircraft during the transition from low to VH frequencies. The cost of this equipment was understood to be low.

Formed to advise the Civil Aeronautics Administrator on matters pertaining to personal flying, the advisory committee is made up of members active in non-scheduled aviation. Members are: Arthur I. Boreman, Des Moines, Iowa; John Groves, Washington, D. C.; William A. Mara, Detroit; Douglas Robinson, Tucson; Fred Weick, Washington, D. C.; Ed Williamson, Seattle; Edward Garbacz, Little Rock; W. T. Piper, Lock Haven, Pa.; James C. Johnson, Springfield, Mo.; Beverly Howard, Orangeburg, S. Carolina; Joseph Bergin, Salt Lake City; and Harry Playford, St. Petersburg, Fla. CAA Administrator T. P. Wright attended the meeting in Denver.

"Push-Button" Flying Claimed for Electronic Pilot — ADF Device

"Push-button" commercial flying may now be possible, according to claims made for a new and improved electronic automatic pilot now ready for commercial aviation. One of nine systems of electronic control for airplanes, the secret of the electronic auto-pilot was divulged to aviation engineers and the press in New York by the Minneapolis-Honeywell Regulator Company. The auto-pilot, which weighs sixty pounds, contains "plug-in" facilities so the airplane can be "tuned in" to a radio beam and automatically flown to its destination without the pilot touching the controls. "It is now completely possible," says Russell H. Whempner, sales manager for the company's aeronautical division, "to equip an airplane with a push-button mechanism tied into the automatic radio direction finder with each button tuned to a different city so that the pilot after take-off can push the button for a point 200 miles away. The auto-pilot will fly him directly to his destination."

Controllable Propellers for Lightplanes Made by Beech Aircraft

Controllable pitch propellers, announced by Beech Aircraft Corp., are now available for lightplanes with Continental A-65, C-75, or similar engines with a number 0 taper at the end of the crankshaft. The unit, known as the R-000 series, can be electrically or manually controlled and produces an increase in rate of climb and decrease in take-off run of 15-26 per cent. It weighs only 30 lbs. installed for manual control.

The R-200 series, designed for engines of 150-225 horsepower having crankshafts with standard SAE 20-spline ends, has been type-certificated by the CAA and will be available late in December. The new Beech propellers are licensed under Roby patents.

Surplus Link Trainers Selling for $1,500 Each

Surplus Army and Navy Link C-3 trainers may now be purchased by the general public. Trainers are sent to the Link factory for overhaul and Link then acts as agent for the Reconstruction Finance Corporation. The surplus C-3 model sells for $1,500, F. O. B. Binghamton, N. Y. Link has more than 200 available and expects to have surplus ANT-18 models soon.

Elaborate Surplus Sales Center for Latin-Americans

Sale of surplus aircraft to Latin-American countries will be made through an export sales center now being built at the Miami, Florida, AAF Air Depot. Army-Navy Liquidation Commission sales will be made only to Latin American customers, including governments, corporations, individuals, and airlines. Exhibits and display rooms will show Army and Navy surplus aircraft. Export sales licenses will be issued on the spot. Surplus air equipment, such as instruments, engines, parachutes, and emergency equipment will be offered. A projection room will show how the equipment should be used.

900 Flight Examiners Helping 150 Inspectors

Approximately 900 new flight examiners are now in the field helping 150 CAA inspectors handle the flood of applicants for pilot certificates. To further speed pilot processing, the CAA has authorized certificated instructors to give private pilot written examinations. Changes in regulations or administrative policy have made it easier to learn to fly or get a private pilot's license by: Authorizing any registered physician to give the physical exam; reducing the age minimum to 17; eliminating meteorology and navigation from the written exam; eliminating spirals, simulated forced landings, and several co-ordination exercises; no longer requiring that every flight be logged; permitting a pilot to fly solo in aircraft of any power (he must prove his ability before carrying passengers); eliminating power rating limitations; permitting a private pilot to give instruction except for hire. Also, cross-country flights are now permitted at any level below 700 feet when ceiling is 700 or less but not above 700 feet if ceiling is 1,200. If the ceiling is above 1,200 feet, pilot must stay 500 feet below ceiling.

New Air Charts and Route Maps Available

New aeronautical charts, destined to replace regional charts, have been prepared by the United States Coast and Geodetic Survey. Route charts, covering areas between important terminals, are also available to the general public. Due to restrictions, Alaska is the only area for which charts are not available.

The new series will be known as world air charts and are smaller but on the same scale as the regional charts they replace. For some years the two basic series of charts for civil aeronautics in the United States have been the sectional and regional charts. The sectional charts, because of their comparatively large scale (8 miles to the inch) will continue as necessary supplements to any smaller scale series. The regional charts will be replaced with world air charts as present editions are exhausted.

World air charts and route charts are priced at 25 cents each and may be obtained from the Director, U. S. Coast and Geodetic Survey, Washington 25, D. C. or from authorized agents at principal cities and airports throughout the United States.

Weatherhead Trophy for Jets in National Air Races

Jet-propelled airplanes will be featured at the National Air Races in Cleveland this summer and a new trophy — the Weatherhead Trophy — will be offered for the most outstanding jet propelled aircraft performance.

The Weatherhead Company, sponsor of the trophy, played a prominent role in the development of jet propulsion during World War II. Albert J. Weatherhead, Jr., World War I ace and vice president of the Cleveland Chamber of Commerce, was one of a group of men the Government selected and sent to Europe to study German methods of jet propulsion development and manufacture.

New 80-Octane Esso Has No Ethyl Lead

A new Esso aviation gasoline, in which 80 octane rating is achieved without adding tetraethyl lead, is now available for private planes. Esso claims this fuel, which was unavailable before the war, will greatly increase permissible power and lower engine maintenance costs. In addition, it will give added protection against detonation for engines originally built to use 73 octane gasoline.

Three Divisional Leaders Named for NAA Work

In an expansion of its community aviation development program, the National Aeronautic Association has announced the appointment of three new divisional managers. Don Seevers, of Washington, D. C., Don C. Johnson, of Waterloo, Ia., and John McKee of Bemidji, Minn., were appointed to the Southwest, Northwest and Southeast divisions. A fourth division manager will be named soon.

Seevers was formerly executive director of the Feeder Airlines Association. Johnston is former commander of the Iowa Wing of the CAP and secretary of the Iowa Aeronautics Commission since 1943. McKee is past president of the Minnesota NAA Council.

Contest for Flapping Wing Model Airplanes

Final competition in the National Flapping-Wing Model Airplane Contest will be held at Dayton, Ohio, on December 17, 42nd Anniversary of the Wright Brothers' first flight. During October, local clubs sponsored contests to locate boys or girls who could build airplanes propelled by wings that flap. First-place winner at Dayton will receive a $100 Victory Bond.

Schweizer to Market Four Sailplane Models

A light, sturdy, utility glider—first post-war model built by Schweizer Aircraft Corporation—is off the assembly line. Closely following this first model will be a utility sailplane, a high-performance two-place sailplane, and a single-place sailplane. The Schweizer Corporation, located at Elmira, New York, resumes glider and sailplane manufacture after two years of warplane subcontract work for the Republic Aviation Corporation.

Aviation Leaders on Aviation Clinic Program

With President Harry S. Truman scheduled to deliver the keynote address as an opener, a full program has been completed for the third annual National Aviation Clinic in Oklahoma City November 19-21. Leading figures in aviation, industry, the armed forces and government will address forum sessions in the State Capitol. The program follows:

November 19: Keynote address by President Harry S. Truman; "The Test Tube of Tomorrow's Airplanes" by John F. Victory, secretary, National Advisory Committee for Aeronautics; "Reconversion to What?" by Alfred Marchev, president, Republic Aircraft Corporation; "Dictatorship in Plane Design," by Albert W. Mooney, vice president and chief designer, Culver Aircraft Corporation; "The Federal Government and the Aviation Industry—Partnership or Peonage?" by Robert H. Wood, editor, *Aviation News;* "Winning Strategies in Aerial Warfare," by Lt. Gen. Ira C. Eaker; "Aviation's Bid for Today's Transportation Markets," by Jack Frye, president, Transcontinental & Western Air, Inc.; "Feeder Airline or Charter Service for Every Village and Hamlet—Fact or Fallacy?" by Joseph Garside, manager, Wiggins Airways, Inc.; "The Ground Facilities and Services for Commercial Air Transportation," by Dr. Lynn Bollinger, school of business administration, Harvard University; "The Rising Flood of Aviation Legislation," by Harry Meixell, manager, state relations, Air Transport Association.

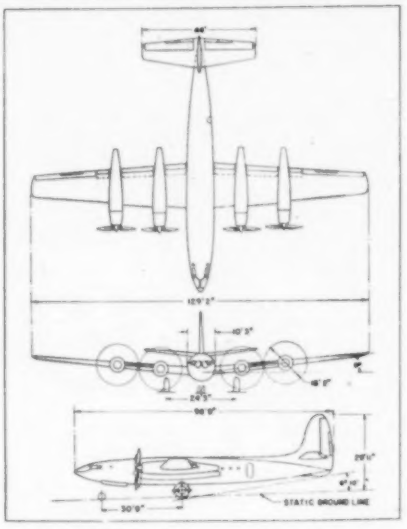
November 20: "Aviation's Tobacco Road," by John Paul Jones, attorney, Des Moines; "The Need for a National System of Airways for the Private Flier," by Arthur I. Boreman, editor, *Dry Goods Journal;* "Cutting the Time and the Cost of Flight Training," by William D. Strohmeir, author, Charles H. Gale Associates; "The New Civil Air Regulations—Boon or Threat to Personal Flying," by Wolfgang Langewiesche, author and special consultant to personal aircraft council, Aircraft Industries of America; "The Atomic Fleet," by Admiral Marc A. Mitscher, USN; "Air Safety as a Factor in Air Defense," by Colonel George C. Price, chief, office of flying safety, AAF; "Policing the World Peace," by Representative Clare Booth Luce of Connecticut; "Industry and Air Defense," by Morton Wilner, former deputy director of aircraft division of the National Aircraft War Production Council; "The Relationship of Military Air Power to Civil Aviation," by L. Welch Pogue, chairman, Civil Aeronautics Board; "Aviation and Public Information," by Eugene E. Wilson, vice chairman, United Aircraft Corporation.

November 21: "Aviation Education for Public Schools, Private Flying Schools, Universities and Colleges," by Dr. Frank W. Hart school of education, University of California; and a special address by Lt. Gen. James H. Doolittle, AAF.

The National Aviation Clinic is under the sponsorship of the National Aeronautic Association. William R. Enyart, president of the NAA, will preside over the opening session.

Details of 400-mph. Rainbow Transport

Here are size and performance figures for the Rainbow, Republic Aviation Corporation's giant transport plane recently ordered by Pan-



American World Airways. The Rainbow has a gross take-off weight of 113,250 pounds, spans 129 ft. 2 in., is 98 ft. 9 in. long and 29 ft. 11 in. high. Four Pratt & Whitney Majors utilize exhaust jet thrust for a total of 13,000 horsepower. With a crew of seven, fuel capacity is 5,570 gallons, passenger capacity forty, and range with no reserve 4,150 miles. Payload for these conditions is 10,000 pounds. At 40,000 feet, top speed is 450 mph.; cruising speed 400. Rate of climb at sea level is 1,680 feet per minute; rate of climb at 5,000 feet on two engines, 320 feet per minute. Stalling speed is 95 mph.; landing distance over 50-foot obstacle 3,000 feet. Take-off distance over 50-foot obstacle is 4,300 feet. Cost: $1,250,000.

Aviation Education Spurred by Denver Congress

The challenging need for aviation education—both by the man on the street and by educational institutions—was the leading topic at the recent Denver Congress on Air Age Education. Sponsored by the Social Science Foundation of the University of Denver, the Aviation Council of the Denver Chamber of Commerce and the University of Denver, the Congress was the first of its kind and attracted delegates from all parts of the country.

The need of more emphasis on aviation in the educational fields—elementary, secondary, and higher—was an important topic. Because of technical advancements, teachers learned, it is going to be a challenging task to keep classrooms up to date with aviation. To keep pace with the modern air-age educators suggested new techniques would have to be developed to replace text books. Motion pictures, pamphlets, newspapers, magazines, and similar materials were suggested to supplement time-worn methods.

Poll Favors Airplane Repairs Without Approval of CAA Inspectors

United Pilots & Mechanics Association has announced that on the basis of a nationwide survey 92.9 per cent of airport managers, fixed-base operators, mechanics and pilots who replied favor permitting licensed A & E mechanics to make major repairs and alterations to airplanes and return them to service without obtaining a CAA inspector's approval. Only 5.9 per cent favored the present regulation and 1.2 per cent expressed no opinion. They also favored permitting the A & E to make the annual inspection of aircraft and renew the airworthiness certificate.

On the basis of these returns UPMA recommended to the CAA's advisory committee that all A & E mechanics meeting the following qualifications be authorized to make major repairs to aircraft and return them to service without CAA inspection and also perform annual aircraft inspections and renew airworthiness certificates: (1) Mechanic must have at least two years' experience in maintenance, repair and alteration of aircraft. (2) Must have no violations adjudged against him. This requirement can be waived in justifiable cases. (3) Must be regularly engaged in the business for one year prior to designation. (4) Must be at least 21 years of age. (5) Holder of an "A" license and another holding an "E" license may perform jointly if properly designated.

ASME Emphasizes Air Power

Air power will be the general theme of the 66th annual meeting of the American Society of Mechanical Engineers, to be held November 26 to 30 at the Hotel Pennsylvania in New York City. The theme is in recognition of the part that air power played in winning the war and as a tribute to the aviation section of the A.S.M.E., observing its 25th anniversary.

FLYING BOOKS

For the Military and Civilian Pilot or Crewman!

FLYING FACTS

For the Private Pilot
By Homer Yale Jones
CAA Licensed Commercial Pilot, Instrument Pilot, Ground Instructor

An outline system of Navigation, Meteorology, General Service of Aircraft and Civil Air Regulations with Questions and Answers—with complete wind correction and angle tables.

Written expressly for Private Pilot examinee, by a man who has trained hundreds of Private Pilots. It is the system he has used in the class room and on the flying field; thousands have used this valuable book to good advantage.

145 pages, 7 inch x 10 inch; paper, $2.50.
Discount six or more, 60%.

BART'S AERO QUIZ-BOOK

By Ed Bartholomew
CAA Licensed Commercial, Instrument Pilot, Ground Instructor, Former Test Pilot, CAA Flight Supervisor

A quiz type study, refresher and examination system for the Private and Commercial Pilot and Ground Instructor Examinees. Covers CAR, Meteorology, Navigation, Airplanes, Engines, flight tests, acrobatics, etc., with diagrams. Over 1,200 multiple-choice simulated questions with answer keys, examination blanks and grade sheets.

Written for the student pilot and returning pilot who needs help in obtaining his CAA pilot license as well as his Ground Instructor ratings. The most sensible approach to the Private or approach to the Private or Commercial pilot certificate. It has been used by thousands throughout the U. S., Canada, Alaska and by the boys overseas. Now that they are coming home, they will want Bart's Aero Quiz-Book to study for their license.

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142 pages, 6 inches x 9 inches; paper, $2.50.
Discount six or more, 60%.

NEW PILOT'S CIVIL AIR REGULATIONS

The Actual Rules and Amendments, adopted and effective August 1, 1945, complete and in authorized detail. Every pilot will need these for his examinations. These are the changes for Post War flying. Contains parts 20, 43, and 60. ..... 75c

Trade discounts 50% six or more.

Order from
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Civil Air Patrol

AAF Preparing Peace Program for CAP; League Support Pushed

While plans were being shaped for a meeting of all forty-eight Civil Air Patrol wing commanders to discuss what the Army Air Forces wish CAP to do in the future and what support the AAF can offer in the CAP program, it has been learned that the AAF is making a detailed study of a positive program for CAP during peacetime.

The Air Power League is carrying its support into all levels of CAP activities and is expected to supplement AAF support of the CAP. Col. Howard W. Angus of New York, executive vice president of the League, has been on an extensive tour of CAP units delivering addresses, some of them off the record, outlining the importance of close CAP-APL co-operation. "I don't think it is possible for the Air Power League to make us stronger in the air without support of the Civil Air Patrol," he told one meeting. The League is setting up local units throughout the CAP, and they in turn are establishing state councils.

Headquarters Lists Special Projects

Civil Air Patrol national headquarters has announced five special projects for units to concentrate upon in the future:

1—Flight scholarships for members with special aptitudes.

2—Promotion and building of airports and their facilities.

3—Locating, mapping and marking areas for auxiliary fields, which may be used for airports.

4—Placing of air markers in prominent places.

5—Search and rescue, a volunteer emergency service, for planes in trouble or missing.

CAP Plane Rushes Plasma to Save Hunters

Two hunters, who shot each other when firing at a buck running between them, in Colorado, received blood plasma via CAP. Capt. William Masden, CAP, flew the plasma to Gunnison, Colorado, where the two hunters were being treated; he risked icing conditions in the mountains to make the delivery. Captain Masden recently took a Denver *Post* reporter in a flight over Colorado for a demonstration as to some of the nature of CAP's activities.

Wings Active in Establishing Radio Nets

Civil Air Patrol communications officers have been advocating additional steps being taken to set aside an amateur radio band for a CAP net. Several Wings have already taken measures to organize radio nets among members who are licensed amateurs. Pennsylvania headquarters is to organize a radio net throughout the Wing, with stations operated by licensed amateur members. All planning for radio activities, however, depends upon when the Federal Communications Commission reopens the low frequency amateur bands.

CIVIL AIR PATROL CADETS keep their training up with encampments, drills, classes and CAP duties. Top photo (by Army Air Forces) is a group of Cadets at encampment at Lowry Field, Colorado. Bottom photo is of a CAP Cadet radio class of the Portland, Oregon, squadron. Lt. Forrest Berg is the instructor.

Massachusetts Active in Flight Scholarships

Eight CAP Cadets and senior members of the Massachusetts Wing have been awarded scholarships from the CAP Flight Scholarship Fund, and fifteen other members have been awarded flight instruction by Jennings Brothers Air Service. One of the recipients, Clara Bjornson, Webster Place, West Newton, became the first girl in CAP to be awarded a scholarship in the Massachusetts Wing. She is a member of Waltham flight of CAP. Another winner, Cadet Richard Snyder, Holyoke Squadron, completed his eight hours flight instruction in ten days, taken at Northampton Airport.

Rudy Mueller New Nebraska Commander

Lt. Col. Harry B. Sidles, Civil Air Patrol, has resigned as Nebraska Wing Commander to concentrate on his business affairs. Major Rudy Mueller, Omaha, has been named by national headquarters as the new Wing Commander. Major Mueller was for several years manager of the Omaha Municipal Airport.

Cadets in Maneuvers

Twenty-two CAP Cadets from Nebraska Wing, Squadron 1 at Omaha, participated in State Guard maneuvers and practice problems at the police range and the Omaha water works last month. The Cadets were supposed to be rioters and the Guard's job was to stop them. The Cadets, with a two-inch hose, stopped the Guard and the "rioters" turned the tables and got away from the Guard. Captain Heinsen and Lieutenant Butters were in charge of the Cadets.

Los Angeles Group Maps Varied Program

A ten-point Civil Air Patrol program has been planned by 125 staff officers of the 1st group, Los Angeles, CAP, to shift the emphasis of the CAP program from military to civil objectives. It proposes:

1. CAP air base for model airpark for the 1st Group.
2. Airmarker program and co-operation with General Petroleum Company by handling an aerial survey on a paid flight operation basis.
3. Smoke survey to further aid the city and county.
4. Cadet competitions with inter-sectional and inter-state members participating.
5. National rifle units, with all squadrons being members of the National Rifle Assn.
6. Flight training with the use of PT's, and the establishment of squadron flying clubs.
7. Flight proficiency.
8. Synthetic training building, housing Link trainers, navigational trainers and radio.
9. Public relations utilizing a monthly paper to be printed called Group Review.
10. Hobby sections for squadron flights, photography, radio, handiwork, band music and the like.

BOOK REVIEWS

Aviation: What Everyone Should Know, *by Devon Francis, published by The Bobbs-Merrill Company, New York, price* $2.50.

Mr. Francis, who is Editorial Associate of *Popular Science Monthly*, has the happy faculty of presenting technical matter in a non-technical manner, of simplification without over-simplification. He recognizes the reader as an intelligent person and treats him accordingly. The result is a concise, clearly written book that covers the science of flying from basic training through the loops and rolls that are the basis for all advanced maneuvers.

For convenience, a glossary, bibliographies and guides to aviation organizations and aircraft manufacturers are included.

Your Post-War Place in Aviation, *by Russ Brinkley, published by The Aviation Press, 113 West 42nd St., New York City, price* 50c.

This book presents the "Know-How" of Civil Aviation in clear, interesting language. The author has drawn from his long years of experience as a commercial pilot, ground school instructor, airport operator and editor to produce a volume that should be helpful to every man in our Armed Air Forces. It should be equally valuable to the thousands of Civil Air Patrol Cadets and young people studying aviation in our high schools.

The introduction is by Capt. Eddie Rickenbacker.

NEW LITERATURE

Baker Steel & Tube Company, *Los Angeles, Calif.*, has made available a chart prepared by Benjamin Ostlind of their engineering department which will be of interest to manufacturers, engineers and technicians who employ steel.

This chart permits a direct reading of the column strength and allowable stresses for standard sizes of steel aircraft tubing, when the end fixity condition and the type of steel are known. It may be used, reversely, to find the proper size and kind of tubing to use when the column load and other factors are known. The chart may be used for other than round tube columns by following the directions. It will be sent without obligation upon request.

National Machine Tool Builders' Association, *Cleveland, Ohio*, has just published an illustrated booklet explaining the historical relation between jobs, machines and prices. The booklet tells how improved machinery contributes to high level employment at good wages in service industries as well as in manufacturing. Copies will be mailed upon request. Ask for "Machines—Prices—Jobs."

The Imperial Brass Mfg. Co., 1200 *W. Harrison St., Chicago 7, Ill.*, has issued a new folder on tubing tools, featuring a handy tube-working tool selector. The tools are for use with copper, brass, aluminum, thin-wall steel and similar tubing.

Copies of this folder, designated as No. 347, may be obtained by writing to the manufacturer.

The DoAll Company, 1301 *Washington Ave. So., Minneapolis* 4, *Minn.*, has announced a booklet entitled "Friction Sawing" available upon request. This booklet will be of interest to readers who are investigating this new technique for rapid cutting of materials in all types of industries.

Aeroquip Corporation, *Jackson, Mich.*, has issued their Industrial Bulletin No. 104 on Medium Pressure Hose Assemblies.

Manufacturers Screw Products, 216 *West Hubbard St., Chicago* 10, *Ill.*, has printed a pocket size Library of Engineering Data on four vari-colored cards enclosed in a durable handy pocket envelope. Included are Machine Screw Weights and Decimal Equivalents of Twist Drills. To secure a set write on your letterhead stating your position with your company.

Cannon Electric Development Company, 3209 *Humbolt St., Los Angeles* 31, *Calif.*, now has ready for distribution a new revised edition of the Cannon Electric Type "K" Bulletin on electric connectors—sixty-four pages of information on "K" and "RK" plugs and general electrical applications. Free on request to the Catalog Department.

Metal Hydrides, Inc., 22 *Congress St., Beverly, Mass.*, has just published a 20-page booklet describing the Hydride Process and its products. The developments described constitute real news in the fields of metallurgy and chemistry. The booklet will be sent free to anyone interested. Ask for "The Hydride Process and Its Products."

Bendix Radio, Division of Bendix Aviation Corporation, *Baltimore* 4, *Md.*, has issued two illustrated booklets of interest to airmen. They are titled "Bendix Automatic Radio Compass, MN-31 Series", and "MS-105A VHF Broad Band Antenna".

Electrical Engineering and Manufacturing Corporation, *Los Angeles, Calif.*, has published their new facilities and products catalog, "Custom Built Motors for a World of Needs". This complete, illustrated brochure presents a full history of the manufacturing experience of the firm, giving in detail the wide variety of specially designed motors engineered for diverse industrial and military applications. Mailed free upon written request.

Plan-O-Mill Corporation, 1811 *E. Eight Mile Road, Hazel Park, Michigan*, is offering without charge production planning cards and data sheets of value to industrial executives and engineers. Designed to simplify the layout of production flow by providing scale machine models which can be placed on the factory floor plan and arranged to meet particular production or space requirements. A set of three cards is offered, covering three different Plan-O-Mill models.

North American Philips Company, Inc., 100 *East 42nd St., New York*, has announced a new 16-page illustrated booklet that covers basic theory, principles and applications of X-ray diffraction. Text material was written by F. G. Firth, Research Engineer.

Films for Latin America

Aviation Films, Inc., Los Angeles and Hollywood, has announced the launching of a program of films, under the trade name of Avia Films. They will stress aviation and related subjects. The present program is toward the Latin American trade.

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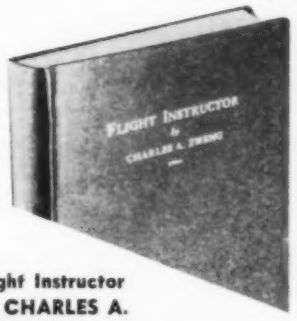

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AERONAUTICAL TRAINING by Zweng. (Important Notice) The New Private Pilot Examinations pertinent to Revised CAR Effective July 1, 1945, to include Parts 60 and 43 are now covered, with "typical new Multiple Choice Examinations" for both Private and Commercial included. $3.00 postpaid or C. O. D.

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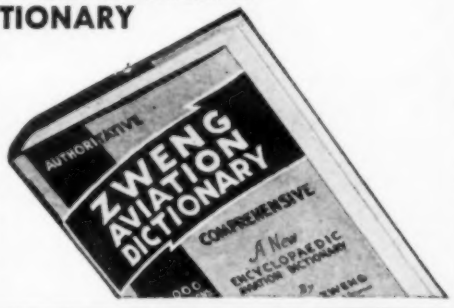

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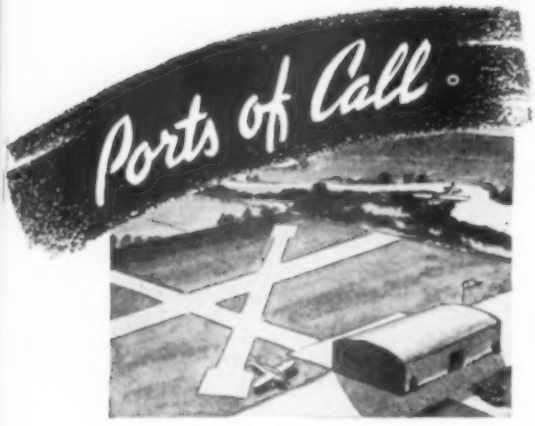

By TONY HAGMANN

Los Angeles—Twist a wildcat's tail, beat a full grown tiger or stomp like a bull at a bull fight, but don't say Los Angeles ain't air-minded. They held a meeting at the Civic building about airport planning. Anybody could go so off we trundled. Glenn Eastburn (Chamber of Commerce) was there; Bert Rhine (CAP); Prentis Cleaves (Lockheed), and a man ahead of us who had a gun in his pocket and said the world was going to hell. In back of us were some citizens from Pasadena who were "again-ers." They own horses "which don't make much dust" and griped about plane owners getting special privileges and suggested that "grass on airports would make good grazing." This stopped us. When somebody quoted the figures of 5,000 private planes in the area landing sixty to the hour, it stopped them, but not for long. "Special privileges, dust, noise" they mumbled, and got up and left—probably to graze on an ice cream soda. We couldn't help noticing one of them wore sandals. Cute on a hoss, huh? In spite of everything, it looks like LA will wind up with sixty-two airports. They have twenty-six already.

Remember Ben McGlashan who used to operate a CAP base on the Gulf? Well, he and George Fisher, ex-Douglas, have opened up a shop selling airplanes. They had 800 deposits on a certain airplane and refunded every dime, and are making a deal with another company which will "operate on sound business principles." It is a secret which company is going to fall heir to all this business but no secret that these two fellows are running an unusual business. They are not going to operate from a field and they are going to get the best deal and plane they can for their customers, or give 'em their dough back. Ben asked us to "tell everybody hello and to be sure to look me up when they come out." He flies a real dude of a plane and knows some good fishin' spots. Hint, hint.

Monrovia—Signs on the highway warn, "Look out for the airplanes," and they mean it. The field is set off the highway just spittin' distance and attracts a lot of once-around-the-field-for-a-buckfifty trade, plus some darned fine personal pilots. Run by "Bud" Hanser, you will find Elmer Riley and his wife, Eleanor, operating from the field and they claim they like "just the weather" better than Texas. They were at Sweetwater during the WASP days. Elmer was instructor in charge. He looks happy now. Another Texan there is Forrest A. Garlick who runs the shop. He's been here a long time but busted his boots to get a passport back. When ole Howard Riley saw his passport, he shook his head: "Those Texans . . ." and put it carefully away.

Three WASPs (ex, of course,) are the Ercoupe representatives on the field. They are Dolores Lamb, Beverly Beesemyer and Pat Pateman. They will sell a plane, teach you to fly it and bribe you with a home cooked dinner. Pretty, too.

We met Jack Aldridge, James Sheller, Mrs. Jimmy Haislip, Rae Rambeau, Sidney Shannon, Stephen Robinson, Fred Knox (CAA) and Katherine Gordon (who owns a plane with Calvin Mathieu and Jerry Kron) while they were doing bench time, waiting to see if the rain would hit or miss. It missed. So we like Monrovia.

Long Beach—The All-American Ensign made its first showing to the press at the country club. It is a pert looking job; we were impressed with the cockpit. Clean, soft, roomy and an instrument board resembling a dash board—a nice little line of things to push or pull depending on what you want to do. The test flight has been or will be by Gene May who is a Douglas test pilot. Others looking like a proud parent were the brothers, Jerry, Ernest and Dude Adler—president, vice president and chief engineer of the company. Met Jim Birchett, Frank Ottoboni, Bud Keeler, Norman Masterson and all our competition (ho-hum) looking more than interested.

The Flying Tigers have opened a freight line with a flock of Budd stainless steel planes. It is a whopper-dopper success. Bob Prescott, AVG from Ft. Worth, is president; Bob King, radio; Dukes Hedman, pilot; Joe Rosbert who was with China National Airways Corp. and walked a hen of a long way back from one flight in particular, also a pilot; Link Laugh-

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SQUATTERS CLUB for airmen ditched at sea took in a new member when Lt. Col. Gregory (Pappy) Boyington, Marine ace with 28 enemy planes to his credit, was liberated recently. John F. Kidde, president of Walter Kidde Company, is shown presenting a life raft to Boyington, who was shot down at Rabaul and kept prisoner twenty months. Ditched airmen may apply for Squatters Club membership by writing to the organization at 140 Cedar Street, New York 6, N. Y.

lin, pilot; Bob Raines, Reno, Nevada, pilot; Dick Rossi, pilot; Jack Cornelius, pilot—he is from Commerce, Texas; Jules Watson and Al Eager, complete the roster. They'd brought the first load of penicillin in for Squibb the day we were there and have flown such cargo as chicks, horses, household goods, grapes, cantaloupe, flowers, pheasant hunters to South Dakota and a lot of Navy lads who wouldn't wait for airline tickets to get home. You can spot one of the planes coming into the field real easy. She looks "Swivel hips—sway back—slightly ready to bear." We'll bet you a soft orange against a mink coat the idea will bear plenty of profits for the company and we'd bet more, but we *have* an orange. This place is full of THOSE.

Bye now . . .

Dallas, Texas—*by Sandal Dailey.* The new lightplane trainers have been attracting favorable comment wherever shown around here and Dallas dealers appear pleased with what they'll be selling.

R. R. Millsap, formerly operator of Hampton Airport (now Clearview), brought the new Aeronca trainer over here for a few days. At Skyline Airport and White Rock Airport he demonstrated its attractive new suede-finished upholstery. The new trainer is designed so that it may be soloed either from the front or back seat, and has many fine improvements to please the customers, says C. E. Orr of Skyline. Pappy Reeves and Curtis Parker out at White Rock appear equally enthusiastic. Millsap is with Roy Taylor at Fort Worth.

White Rock's E. A. Parker flew back from the factory with one of the new Piper Cub trainers and reported that the new 100-hp. Cruiser should be forthcoming soon.

Jimmie Marshall, Beaumont and Dallas operator, has been a frequent visitor in connection with a new airport he is building out on Buckner Boulevard. He has a new Taylorcraft trainer at Beaumont.

Marshall's field is the twelfth CAA-designated private field for Dallas, and several more are in the picture, including a proposed country-club deal north of town which Major Tex Hudson, back from the Air Transport Command, has in mind.

After three years and four months with the Navy, J. O. (Toots) Womack has come back to Big D. He has been flying Coronados out of Alameda and throughout the Pacific. Reports are that Toots, one of the owners of Mustang Airport, will stay in Dallas now that his stint with Naval Air Transport Service is over.

Luscombe Airplane Corporation made the headlines in the local press with a fire at its downtown location on Camp Street that tied up traffic for some time. However, damage was not severe. Luscombe already had begun moving its equipment from the downtown

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plant to its main factory near Dallas. The big plant is virtually completed and operations are going ahead full speed. The Dallas Chamber of Commerce, deluged with requests for space for new businesses, has given assurance that Luscombe's downtown plant facilities will find quick use.

E. Wilson Germany has announced the dates for the 1946 Pan-American Aircraft Exposition. The event will be held March 1 to 5, and plans for a large-scale show are now under way.

Birmingham, Ala.—*by Edith Wideman.* The door mat with WELCOME has been put down in capital letters for Captain Asa Rountree, Jr., who has resumed the position of director of aeronautics for Alabama from which he has been on military leave. He returns to his position with twenty-eight years' experience in military and civil aviation, dating back to 1917. A better man the Gov'nor could ne'er have found!

Carnival spirit was in true color at the auction of 25,000 personal property items at Southern Airways in Decatur. Highlight of the bidding came when about sixty people yelled "ceiling" on a tractor. It went to the man winning a foot race and that was a sight to behold.

The accounting department of Southern Airways has been moved from Decatur to the general office in the Comer building in Birmingham. This adds new faces to the downtown office—John O. Braswell, Sallylu Meinhardt and Margaret Chenault led by Treasurer I. Rhett Ball. All are house-hunting—do you have some?

Another move—shall we say intra-city—has been made by Eastern's CTO into temporary quarters at the Molton hotel while new and beautiful offices are being renovated in that building for Eastern's permanent CTO. With the additional Chicago service being put on, larger quarters are necessary to take care of eighteen trips a day through Birmingham. We hear there are even more to come.

We are all a-dither, a-gog and such over the announcement of PCA putting on DC-4's. The local office informs us that by December 15 there will be two in operation and there are presently eight in the process of reconversion in the Baltimore shops at Glenn Martin.

Aviation Writer Cleve Courier dropped in to tell us that he is now associated with Skycraft, Inc. Congratulations.

Ed Bishop has hied off to Florida to help establish Delta's new route down there. We understand that Ed will be back with us after opening up the Jacksonville and Miami traffic offices.

The Aero Club has really gone into action in their recent undertakings of programs, projects, etc., among which is discussion of the sponsorship of the Victory Air Carnival next spring. More about all of this later.

Alabama Aeronautics Commission theatre-ed a group to see "Captain Eddie"—what a picture! What a guy! Have you seen it?

And will we see you at the Clinic?

Columbia, S. C.—The South Carolina Aviation Association, better known as the "Breakfast Club," and which is a non-political, non-profit organization, held its first meeting since the war, Sunday, October 14, at Columbia. The breakfast was served at the Jefferson Hotel, where more than 135 persons attended. In addition to the aviators who arrived in forty-three airplanes — representing practically every civilian airport in the state —numerous pilots in the Columbia area attended.

The Breakfast Club holds its meeting each two weeks at a different point each time so as to give the pilots throughout the state an opportunity to visit the other airports. It also provides the operators an opportunity to encourage cross-country flying by its students.

The Civil Air Patrol volunteered its services to aid the Hawthorne Flying Service in handling transient airplanes. The Junior Chamber of Commerce provided transportation from the field to the hotel, and the Chamber of Commerce Aviation Committee was also on hand to give assistance.

COTTON DUSTING WITH PERSONAL PLANES is attracting more and more interest in the South. Here's a demonstration of dusting in a Taylorcraft with Ray J. Goss at the controls during a meeting of Oklahoma's Flying Farmers at Stillwater.

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E6B Dalton D.R. Comp. (Plastic)	10.00	Elementary Physics as Applied to Aviation	1.00
Mark VII Dalton Computer	5.00	Cox & Stevens Computer	35.00
Mark VIII Dalton Computer	1.00	Flying Facts for the Private Flyer	2.00
D-4 Time-Distance Computer	2.00	Full Career Pilot Flight Log Book	2.25
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Kansas City, Mo.—*by Marion Melcher.* It's a far cry from flying, I know, but it's fun to attend a coursing meet in Abilene, Kansas. Those greyhounds streak after the bunny just the way a Flying Tiger hits an enemy. Of course, the place just swarmed with Texans, and that Airman's Passport to the Republic of Texas which SOUTHERN FLIGHT issued me certainly made a hit. I never knew it would come in so handy in another state. On the drive from Kansas City I managed "an airport mouse's" holiday by taking a look at the neighboring airports. A newcomer as far as I'm concerned is the hangar all neat and clean in its stone attire, at Manhattan.

A sure sign that the war's over is the lifting of priorities on the airlines. Seems to me I've tooled down to the Municipal terminal every other day seeing friends off. Sure would like to fly to that Aviation Clinic down Oklahoma City way in November.

When he completes his terminal Army leave, Lt. Col. Leonard Jurden, formerly 5th Region Administrator of the CAA, will resume his position with the Administration. It's events like this—and the cocktail party honoring Paul Richter, out of the Navy and back with his airline affiliation—that add to the secure war-is-over feeling.

ALBERT I. LODWICK, president of Lodwick School of Aeronautics at Lakeland, Fla., and well-known civil aviation executive, received the Bronze Star recently from Lt. Gen. James H. Doolittle for meritorious service overseas as special War Department technical consultant in missions during 1943-45.

Just as September made its exit we welcomed an industrial party at the airport. The group was composed mostly of Mexican political, financial and industrial leaders attending the Mexican-American conference on industrial research sponsored by the Armour Research Foundation. Mr. Braniff escorted the party from Mexico City in a Braniff plane, while Mrs. Braniff assisted in the entertainment of six of the wives accompanying their husbands. She joined the group in Dallas. The women were presented with red roses when they alighted at our airport here.

There's more buzzing about how our terminal is going to look, and blueprints are before the city council for consideration. We heard the details from City Manager L. P. Cookingham when he addressed a sizeable dinner group in the Hotel Phillips in October. Despite a heavy cold the city manager left fireside and slippers to make the slated talk before the Kansas City Unit, WNAA. "It is good," said the speaker, "to appear before a group that knows the need for expansion of our airport program. It is women like you who can do much to educate the public concerning this need."

Cy Willock is going around getting signers to a petition for the country club airpark he and his partner are promoting. Seems folks just can't get used to the fact that those flying machines are here to stay. They might as well consent to airparks now as later.

A new feature of the current brief completed by the aviation department of the Chamber of Commerce is the result of a travel survey in which the Chamber tabulated information received by questionnaire from 1,500 manufacturers, wholesalers and other business firms in the city relative to all trips made by their representatives during the first six months of this year.

Our Latin-American aviation students at the University of Kansas City had an agricultural tour. This fine, crackling, fall weather was ideal for a visit to the Merryvale farm (near Grandview airport) which specialized in purebred Shorthorn cattle; then Longview farm, near Lee's Summit, to view the purebred Hereford cattle. Longview was known as the largest dairy farm west of the Mississippi for a long time until they converted to Hereford cattle instead of dairying. And don't forget, it's the home of Lula Long Combs, she of horse racing fame. The last stop, which included a barbecue supper, was at the Walter Ross farm, also near Lee's Summit. Walt raises Arabian horses. Incidentally, he and his charming wife, Dorothy, have reservations for the first flight headed for Cairo, when the round-the-world planes start from here. (This being an aviation column, I must remember to begin and end with machines that make like the birds, don't I?) . . .

Navigation Institute Meets

Loran and radar, and their application to postwar air navigation, were subjects of top interest when the Institute of Navigation met in New York City October 25-26. Historically, the meeting marked the first time representatives of so many groups concerned with air navigation ever met in common forum.

James Brown, North Atlantic navigator for American Airlines, outlined the application and limitations of loran, which is the name given to long range navigation by radar. Commander H. H. Maynard, USN, presented Navy meteorological material based on the use of radar in bad weather navigation. Capt. P. V. H. Weems, father of air navigation, is one of the Institute's founders.

Riddle Doubles School Facilities at Miami

Alterations to the plant of Riddle Aviation School at Miami have been completed, and facilities have been doubled to accommodate 120 students at the school. Aviation students for teaching posts at Escola Tecnica de Aviacao, Sao Paulo, Brazil, are taught at Riddle for the Brazilian Air Ministry.

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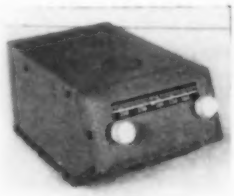

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El Paso Schedules International Air Program

International Aviation Day celebration will be held in El Paso, Texas, December 15, 16 and 17, with the United States and Mexico participating. The purposes of the meet are to celebrate aviation day and honor the men of both countries who have contributed to the development of aviation; to "sell" the El Paso area to both countries as an aviation center. Exhibits and demonstrations will feature the three-day celebration.

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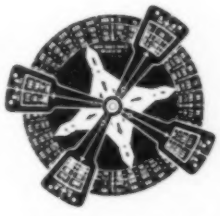

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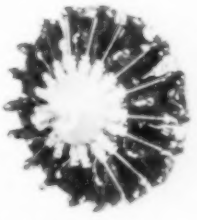

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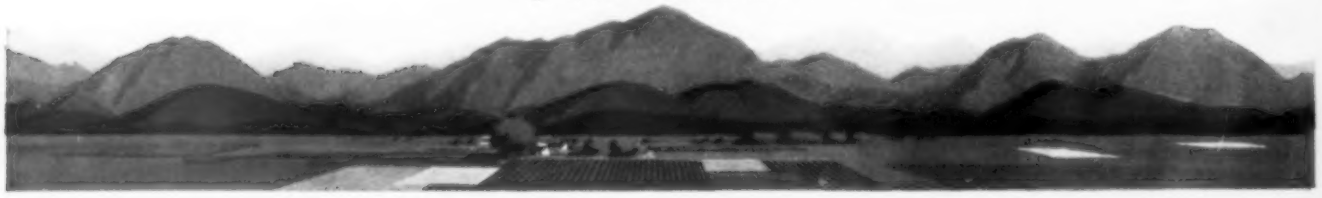
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